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THE
OHIO JOURNAL
OF
DENTAL SCIENCE.

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Contributions.

“A word fitly spoken is like apples of gold.”—SOLOMON.

A PARTIAL CONSIDERATION OF CEMENT WORK
AND SOME NON-SCIENTIFIC EXPERIMENTS
THEREIN.

BY CHAS. B. ATKINSON, D.D.S., NEW YORK.

IN the *manipulation* of cements, as of plaster, lies almost more elements of success in producing a dense crystallization than in the materials entering into their composition.

Certain laws must be fulfilled in offering materials to each other for crystallization, but a wide range of action seems to pertain to those crystallizable materials used by dentists, depending largely on the respective quantities of liquid and powder used, but more on the thoroughness with which the materials are mixed.

The writer has had most satisfaction in the results obtained after mixing cements—and plaster—quite thin (perhaps milk is an uncertain simile, but a more uniform liquid as ordinarily met with does not come to mind) and manipulating until a sufficient stiffness results for the purpose in hand.

In the use of Dr. J. H. Smith's Adamantine Cement (oxy-phosphate) in all of the experiments hereafter mentioned, and in the use of the same cement without addition of other materials, a very satisfactory condition has been induced by kneading between the fingers a pellet of sufficient size to slightly more than fill the cavity or space it is desired to close, continuing this treatment until a satisfactory degree of plasticity is secured. This is particularly gratifying when the mixtures are used, and gives very extended control over this material, making it possible to do almost anything with it.

The thinly mixed preparations require a longer time to set, counting from the separate materials to their becoming hard after mixing, but the wide range of time possible, after familiarity with the named circumstances is gained, broadens the field for cement work and lifts it to a more durable position than seems to be generally accorded to this variety of plastic fillings. The pellet may be kneaded until quite resistant and then placed in the cavity and finished, requiring only a very few minutes of work in the mouth.

The experiments which are here noted were suggested by the unpremeditated admixture throughout the oxyphosphate filling, of the agent usually employed in pulp treatment, viz.: creosote and oil of cloves, equal parts.

(The purpose in capping an exposed pulp having been to combine the remedial agent with a portion of oxide and cover with oxyphosphate.)

The resultant crystallization proved so hard that attention was directed to the possibility of using essential oils in mixing cements. Thus far a nearly uniform result has been attained, as to time of setting and consistency, in the admixture of the following: creosote pure; creosote and oil of cloves, half and half; carbolic acid, deliquesced; oil of cloves; oil of cinnamon and eugenol. The quantity of the above substances used in each instance was about equal to the bulk of the acid required. The oxide and remedial agent were thoroughly admixed and then the acid added and all thoroughly incorporated. These mixtures set hard in about ten minutes but remain resistingly plastic long enough to handle them in difficult cases.

The control that may be had of oxyphosphate cement by proper attention to a variety of proportions in which it combines

and especially an added toughness, prolonged plasticity and increased resultant hardness and resistance to solution brought to it in the admixtures named, promises in most cases, more for cement than the appellation "temporary," which it often unjustly bears. It is not too certain that *gold* fillings have proved more permanent as compared with cement. This does not say that a *proper* operation with gold does not endorse itself as beyond anything before the profession.

These mixtures are believed to be advantageous because of their antiseptic character being continuous throughout—because of the tolerance of the pulp for them, making it possible to complete the filling and capping at once—because greater durability seems to be indicated in most cases over plain oxyphosphate—because the essential oils seem to modify the crystallization and induce a variable condition of plasticity, more controllable than heretofore, permitting an extensive surface to be covered or a complicated bridge to be set with less anxiety and hurry than is ordinarily observed in such operations.

A series of specimens with specific data is presented with these notes. The experiments have extended over a period of eight months. The creosote and oil of cloves mixture has been quite extensively used and has proved itself reliable in capping, placing non-conductors and setting crowns, bridges and retaining fixtures in pyorrhoea cases.

In finishing cements, eucalyptol will be found an acceptable lubricant, pleasant to taste and smell, antiseptic and a gentle stimulant to the gums. Its use permits trimming down of the filling while still plastic, leaving a polished molded surface. In some cases a coat of sandarac varnish increases the durability of these fillings by immediately sealing the margins. Platinum plate properly formed and having studs or loops soldered inside and placed on grinding surfaces brings cement filling properly among permanent operations. This opens the subject of inlays which have been variously and ably considered by several writers.

NOTES ON THE PREPARATION OF CAVITIES FOR COHESIVE GOLD FILLING.

BY FRANK COLYER, M.R.C.S., L.D.S.

SUCCESS in filling depends upon carefully prepared and carefully filled cavities. It is to the preparation of the cavity I wish to confine my remarks, and it is not my intention to give any detailed account, but simply to draw attention to facts which seem of the most importance.

For the sake of description it seems best that a few remarks should be made with regard to preparation of cavities in general, and then a short consideration of the methods pursued in preparing special classes.

Firstly, I would draw attention to a most important factor, viz., sharp instruments of all descriptions, especially burs and enamel chisels; they are essential for good results. Next with regard to the application of the rubber-dam, previous to preparing the cavity; opinions here vary, myself I think with its aid one can do one's work quicker, and, what is still a greater advantage, have both hands free to work with. Also with the object of saving time I always prepare my cavities on some definite system, and that pursued is as follows:

First, to open the cavity up freely by means of burs and enamel chisels, getting rid of all overhanging edges of enamel, etc. Next, to clear out all softened and decayed dentine as far as possible with sharp excavators, and, thirdly, to shape the cavity to the form required to hold the filling.

With regard to opening up the cavity, the most important point is the avoidance of overhanging edges of enamel, they are a source of failure, and too much cannot be said on this point. It is an almost constant rule to take away any enamel unsupported by dentine (the exceptions perhaps being in those few places where the enamel is not subjected to direct pressure, as for instance on the labial surfaces of front teeth). The reason is simple, enamel is brittle, dentine elastic, and unless the enamel has something to counteract the strain put on it the result is it fractures, and the filling commences to fail.

The next step, removing the dentine, requires but few words,

and these are—use sharp excavators and make decided cuts, avoiding scraping, the latter process being extremely uncomfortable to the patient.

Shaping the cavity is a most important item, and may be safely divided into two distinct steps—(1) obtaining a form which will retain the plug, and (2) trimming and paring the edges.

With regard to the former always endeavor to make the cavity so that all parts are easily accessible, avoiding deep undercuts and receding angles, for with cohesive gold each separate piece has to be taken to the place it is intended to occupy, and if you have inaccessible undercuts the result is that that point of the cavity is insufficiently filled.

Remember also that you are putting a resistant substance into a resistant substance, and that, therefore, it will only require the slightest amount of undercut to retain the plug.

The edges require great care in finishing, for on them depends, to a large extent, the durability of the filling. The best results are certainly obtained by slightly bevelling the edges, leaving them neither straight nor yet undercut. If you have the edge much undercut there will be a few enamel fibres left unsupported by dentine (it being remembered that the fibres always run in a direction toward the pulp) and the result is that with any undue pressure they will give way, and hence form a vulnerable point in the filling; if, however, you leave them but slightly undercut then all the enamel is supported by dentine and hence the source of failure removed.

The best instruments for carrying out this part of the work will be found to be enamel chisels for sides of approximal cavities, small spoons for the cervical edges, and fine-cut cavity burs for the crown surfaces.

Passing on from the edges, starting points certainly deserve a little attention, and to make successful ones it is best to divide this part of the operation into two distinct steps, viz., burying the drill to such a depth that the head is just below the level of that part of the cavity where the point is being made, and then moving the head with a slight rotary motion; if this is carried out the effect is a small cavity.

Now, should the drill-head only be buried halfway, and then the rotary motion made the effect will be a cup-shaped cavity which is useless for the purpose it is intended to serve.

Further, with regard to starting-points always drill them in dentine, and not at the junction of the enamel and dentine, for, if drilled in the latter place, one wall of the starting point is formed by enamel and the effect is fracture during filling.

The direction of drilling starting-points should be as far as possible away from the pulp endeavoring the deeper they are drilled the further to go from the pulp.

Another point in preparing and shaping approximate cavities is the relation of the tooth to its neighbor. All joints should be made as accessible as possible to the tongue and tooth-brush in order that food, etc., may be prevented as far as possible from lodging near them, and, therefore, bearing this fact in mind, always cut back the tooth so that when filled and allowed to close you get only the filling in the tooth operated on coming in contact with the contiguous one, and not the enamel of one with the enamel of the other.

Having then made a few brief remarks on cavities in general, we will next consider the shape required for special classes, and for the purpose of description I propose to divide them into three classes :

(1) Crown cavities, (2) approximal cavities, such as are met with in molars and bicuspid, (3) approximal cavities in front teeth (which involve the greater part of the side of the tooth.)

With regard to crown cavities, but few words are necessary. Make the walls just slightly out of the perpendicular, taking care that all decayed fissures are cut out. The floor of the cavity should be made flat, and the edges trimmed as directed above.

These cavities are best started by wedging two or three large unannealed cylinders down to the base till they are steady. Starting points should be avoided, there being a danger in drilling them of injuring the pulp. Fissure and inverted cone burs will be found most useful for shaping this class of cavities.

Approximal cavities in bicuspid, etc., however, require more care in preparation. To facilitate their description I will take, as an example, a cavity in the anterior approximal surface of a first upper bicuspid. One will readily see that in this class of cavities there are two directions in which we have to prevent the filling coming out, the one from above downwards, and the other sideways.

To overcome this, two ways are open to the operator; the

one by cutting the labial and lingual walls so that they diverge not only in a direction towards the cervical edge, but also towards the second bicuspid. The shaped cavity made being a double wedge.

The other by making two lateral grooves, which diverge slightly as they proceed upward. The cervical edge in these cavities should be left quite flat, and the edge of enamel bevelled off slightly; should, however, the cervical edge be near the termination of the enamel, then it is best to remove all enamel remaining, and allow the edge to be formed by dentine alone, a thin edge of enamel is pretty sure to fracture and chip off in filling.

Should any fissure exhibit itself on the grinding surface, it must be cut off; if this is done so, it will form an additional hold for the filling, if left it is a nucleus for fresh trouble.

Anchorage in these cavities is obtained by making two starting points, one in either cervico-lingual and cervico-labial angle, great care at the same time being taken that they are drilled in dentine and not at the junction of the enamel and dentine.

In approximal cavities in front teeth a different mode of procedure to the above is necessary. The hold for the filling is obtained by grooving both labial and lingual, if there is enough dentine remaining at those parts of the cavity. The cervical edge being left flat, and at each cervico-labial and cervico-lingual angle a starting point drilled and these latter opposed by a pit drilled at the apex of the cavity.

A point of importance in these cavities is to avoid leaving frail walls on the front surface, if left, and improperly filled, the tooth and filling appears black and looks extremely ugly.

When possible, I drill out all cavities in front teeth from the back, cutting them to the shape recommended for bicuspid, etc. The advantage of this method is that the front surface of enamel is able to be retained, and the showing of a large amount of gold also overcomes this latter, to some patients being most objectionable.

Finally, the fact should never be lost sight of, that success in filling depends as much upon carefully preparing the cavity as on filling it.

SOME POINTS IN THE ETIOLOGY, DIAGNOSIS AND
TREATMENT OF EMPYEMA OF THE ANTRUM.*

BY FELIX SEMON, M.D., F.R.C.P.

It is with considerable diffidence that I have, in response to the flattering invitation of your President to read a paper before the Odontological Society of Great Britain, selected the subject of Empyema of the Antrum. The reasons for this diffidence are not far to seek; in the first place, my personal experience with regard to this disease is very limited; secondly, none of the cases I have observed have shown any unusual symptoms or offered other points worthy of detailed description; thirdly, the views on the whole subject of empyema of the antrum are at this moment in such a state of fluctuation that any opinions about it which may be offered to-day may be antiquated to-morrow.

If, nevertheless, I have ventured to select it, it is just the last-named circumstances which has prompted my choice. The discrepancies of opinion as to etiology, diagnosis and treatment of this important and troublesome affection are so great that I hope it may be acceptable to a society of experts to have laid before them a review of the present state of these questions. I wish particularly to state at the onset of my remarks that they cannot lay any claim to originality; all I aspire to is to draw attention to those points concerning which it would appear most desirable that a greater consensus of opinion should soon be obtained.

Added to this paper will be found a bibliography, in which the more important papers which have been published since the revival of interest in the question three years ago are enumerated; references to mere casual contributions will be found in the *Internationales Centralblatt für Laryngologie, etc.*, from 1886 to the present day.

Before entering upon a discussion of the etiology of the affection, it may be well to say a few words concerning its frequency. Empyema of the antrum well illustrates the truth of the saying that there is "fashion in disease" as well as in other things. Whilst up to the commencement of 1886 only a few

* A Paper read before the Odontological Society of Great Britain.

isolated instances of the affection will be found scattered here and there through medical literature, at the present time we not only have a large special literature on the subject, but careful and trustworthy observers, such as B. Frankel, Moritz Schmidt, Heryng and others do not hesitate to say that the disease is a "frequent" one. Frankel states that he has operated upon seven cases within three months; Schmidt made the diagnosis of empyema sixteen times within five months; Heryng diagnosed "with certainty" ten cases within six months. The experiences of these and other observers, however, are completely overshadowed by those of Ziem, of Danzig, to whom the revival of the whole question is due, and who states in a second communication, published in April, 1888, that he has opened the antrum in not less than 227 cases. As in his first paper, published in April, 1886, he speaks of thirty-six cases only operated by him so far, it follows that he must have seen no less than 191 cases within two years. The only explanation of this astounding number which suggests itself to my mind is that in consequence of his first communication, which has, no doubt, attracted a great deal of attention everywhere, many practitioners must have sent him cases. My own experiences so far do not lead me to subscribe to the comparative frequency of the affection. I have no doubt it is more frequent than has been formerly supposed, and I can but re-echo Schmidt's and Heryn's statements in confessing that I have, in former times, probably left more than one case of empyema of the antrum undiagnosed, but I have, ever since having read Ziem's first paper immediately after its publication in 1886, been on the look-out for instances of this kind, and I do not think that I have since allowed such cases to slip by undiagnosed. However, all I can say is that within the last three and a half years, with a material of several thousand cases of throat and nose affections, I have certainly seen not more than a dozen cases of antrum disease in private practice, and in several of these the diagnosis remained doubtful. The future will, no doubt, throw more light upon the question of the apparent frequency of the affection.

Now with regard to etiology.

Theoretically there is, of course, no reason why occasionally the suppurative process should not commence in the antrum itself, and a few cases probably actually originate in this fashion. In

the great majority of cases, however, the antrum is but secondarily affected—the pathological process starting either from the nose or from the teeth. The situation and anatomical relations of the antrum lend themselves to both modes of origin. While on the one hand it opens into the middle meatus of the nose through the ostium maxillare, and whilst it is lined by mucous membrane directly continuous with that of the nose, on the other hand, the alveoli of the two bicuspids, of the first molar and often also of the second molar and the canine tooth are separated from the mucous membrane of the antrum only by a very thin layer of bone. These alveoli are usually visible from the antrum in the shape of rounded projections. Sometimes the roots of the teeth actually perforate the bone and are covered by mucous membrane only. In such cases mere extraction of a tooth may open the antrum. (Frankel.)

Under these conditions it is evident that any inflammatory process affecting either the mucous membrane or the bones of the nose, or, on the other hand, the roots or the periosteum of the teeth, or the alveoli themselves, may be propagated into the antrum, and there set up purulent inflammation. Both possibilities are, of course, not denied by any author, but opinions and experiences most markedly and curiously differ as to their actual comparative frequency.

Zuckerkindl, in his classical work on the normal and pathological anatomy of the nasal cavity, says: "Most by far of the inflammations of the mucous membrane of the maxillary sinus are propagated from the mucous membrane of the nasal cavity. Here it is that the affection first begins and spreads; in its further course it extends to the mucous membrane of Highmore's antrum. The vascular connection of these cavities is so intimate that the one often reacts in the form of congestion of the mucous membrane, even upon the slightest affection of the other. It is true that the mucous membrane of the maxillary sinus may become inflamed, also from disease of the maxillary bones; it is equally known that it may become affected through hyperacute affections of the teeth and their alveoli; B. von Langenbeck even saw purulent blennorrhœa of the maxillary sinus occur in two cases after section of the infra-orbital nerve, performed after Malgaigne's method, in which the lower wall of the orbita is incised. But this mode of affection of the maxillary sinus is

rarer than that propagated from the nasal cavity, and I have, so far, only once had the opportunity of observing it."

In opposing this view Frankel states his case as follows: "I cannot agree with Zuckerkandl, so far as empyema is concerned. Although I have but small anatomical experience on this point, clinical observation has shown me that in the overwhelming majority of the cases of empyema which I have seen, affections of the alveoli of the teeth have formed the cause of the disease. An instructive example of that mode of production of empyema, which I must consider as characteristic for most of the cases observed by me, is the history of Ziem's own case. This author states that he acquired his own fetid blennorrhœa of the nose by a plug of cotton wool having remained too long in one of his molars, which was carious up to the top of one of its roots. Similar conditions obtain in most cases. The patients, for instance, suffer from chronic alveolar periostitis. As a rule the secretion flows away when formed through the channel of the root. If this, however, should become obstructed by particles of food or anything else, retention of the secretion occurs, as a rule combined with slight quickly-passing pain. The diminution of pain indicates the perforation of the secretion into the maxillary sinus. That such was the mode of origin in my own case was rendered likely sometimes by the direct observation of the patient, sometimes by the fact that in not a single case of empyema of the antrum I have seen such a tooth had not either been extracted or was still present showing the affection just described.

Frankel then combats the view that in such cases the order of events might have been just the reverse, *i. e.*, that purulent inflammation of the antrum might have *caused* periostitis and caries of a tooth, and in conclusion of this part of his paper adduces as a further argument in favor of his own view the undeniable fact that of all the accessory cavities of the nose the antrum is by far most frequently the seat of purulent catarrh. This can only be explained by the alveolar origin of the inflammation. Finally he mentions that the nature of the secretion itself speaks against its nasal origin, for in case of true empyema of the antrum the discharge is always *purulent*, whilst in the nose itself no purulent secretion is formed at the same time.

In spite of these clear, important and, as it appears to me, convincing arguments, the views of authors are still curiously

divided on this point, although the experiences of by far the greater number agree with Frankel's views. Thus Christopher Heath, Lublinski, MacBride, Krieg, Fletcher Ingals, Moritz Schmidt, Schech, Walb, Bayer and Heryng state that in the majority of their own cases the disease evidently started from the teeth.

Schech mentions more specially caries, above all caries of the roots, alveolar periostitis, granular odontitis, formation of fistulæ, deficient dentition, ingrowth of teeth into the maxillary sinus and pushing them into the cavity during clumsy attempts at extraction, amongst the dental causes of purulent catarrh of the antrum, and Walb additionally accuses excessive attempts at conversation of decayed teeth, bad filling and retention of stumps underneath artificial plates.

On the other hand Ziem, Bronner, of Bradford, and Krause, of Berlin, lean more towards Zuekerkandl's views, and Friedlander, Kruse's assistant, mentions in a recently published paper that amongst sixteen cases of empyema treated by Hartmann, of Berlin, there was but one in which the affection was due to affection of the teeth. Bayer, of Brussels, although agreeing that the dental and alveolar origin of the disease is the more frequent one, draws special attention to the frequency of the combination of nasal polypi with purulent catarrh of the antrum. In twenty-five cases of the latter affection he found six times nasal polypi, and in at least two of these combination cases the teeth and the alveoli were absolutely healthy. He explains the antrum disease as due in these cases to obstruction of the nasal opening of the sinus by the polypi and to retention of the secretion, a view which is probably correct.

My own experiences are distinctly in favor of the dental origin of the affection; although in several cases the etiology was rather obscure, in the majority the commencement could be clearly traced to affections of the teeth, and I have not seen a single case in which a nasal origin could with certainty be established.

The question wants further elucidation. It is not merely an academic one, but, as will be shown further on, of great practical importance with regard to the best mode of treatment of the affection. So far, I think, the balance is in favor of those who believe in the greater frequency of the dental origin; further experience will, no doubt, satisfactorily settle this point.

We next come to the question of diagnosis, and I shall limit my remarks here to the diagnosis of *chronic* empyema, speaking first of those cases in which *no* obstacle exists to the discharge of the purulent secretion of the antrum into the nasal cavity, and secondly, of those cases in which the ostium maxillare (hiatus semilunaris) is *obstructed*.

To Ziem, undoubtedly, is due the merit of having shown, on the one hand, that certain symptoms, which had been handed down from generation to generation as characteristic of empyema of the antrum, are by no means necessarily connected with that disease, and of having on the other hand drawn attention to the importance of other, formerly much neglected, in reality, however, almost pathognomonic signs.

Amongst the former are (1) distension of the sinus, (2) increased secretion when lying on the healthy side, (3) pain in the infra-orbital region, (4) inflammatory swelling of the corresponding cheek. It is, of course, not denied by Ziem that all these symptoms may and do occur, singly or conjointly, in empyema of the antrum, but by the description of his first series of cases he has incontrovertibly shown that well developed empyema often exists without any of these symptoms being present.

The symptoms, on the other hand, to which little attention had formerly been paid, and the importance of which has been emphasized by Ziem, are the *onesidedness* and the *periodicity* of the purulent discharge. The former of these symptoms will, of course, not obtain in cases in which *both* maxillary sinuses are affected, but such cases are according to universal experience exceedingly rare, and do hardly count in comparison to the frequency of the unilateral affection. In a few cases, again, the discharge is continuous, but this also is only an exception to the rule. In the great majority of cases in which the nasal opening of the antrum is not obstructed, the disease is characterized by unilateral, periodical discharge from one nostril, the nostril being, of course, that corresponding to the diseased antrum, and the periodicity corresponding to the different positions of the patient's head. As the ostium maxillare is situated comparatively high above the floor of the antrum, it is obvious that secretion can only take place when the cavity is either almost full, or when the patient's head is being held in such positions that its emptying into the middle meatus is facilitated. In consequence

of these anatomical conditions the patient's statements often are very characteristic. Frequently the complaint is heard that whilst at night, *i.e.*, when the patient lies in recumbent position, and the purulent matter thus, of course, gravitates downwards, there was an almost constant trickling of foul secretion into the *throat*; on the other hand, in the morning, as soon as the patient bent his head slightly forward, as in writing, pus either trickled or streamed in a current from one *nostril*.

A further characteristic circumstance is the fact, that the secretion is almost always foetid, and the foetor is susceptible to the patient himself, and that it is, indeed, perceived by him much sooner than by other people.

Quite different from bases of ozæna, the physician, when examining the patient's nose and when compelled to be quite near him, often in cases of empyema perceives hardly anything of the terrible odor, which not rarely forms the patient's most prominent complaint. That the latter, however, is not imaginary, is proven, when in such a case the antrum is opened and often horribly stinking pus is evacuated. Not rarely a putrid taste in the mouth, with nausea and want of appetite, are complained of, but this is not constant.

Equally inconsistent are neuralgic sensations of very varying character. The most frequent of these is a dull heavy pain which, curiously enough, is not nearly so often felt over the diseased part itself as in the region of the frontal sinuses. The true significance of this form of headache, therefore, would appear to be an important diagnostic matter, else the frontal sinus may be opened, whilst the disease is actually in the antrum.

Sometimes there is transitory swelling of the cheek over the affected part; MacBride has in two cases seen distinct swelling of the gums.

Not often pain at the bridge or root of the nose, in the cheek, in the ears, in the teeth, is complained of; more frequently, however, depression, inability and disinclination for mental work, hypochondria, general derangement of health, etc. In some cases it is remarkable how much the patient's general health and spirits appear to have suffered from what may be thought so trivial an affection.

Summarizing the subjective symptoms of this class of cases, *viz.*, in which free discharge of the secretion can take place, it

may be stated that if an adult patient complains of unilateral, periodical, purulent, foetid discharge from one nostril, sometimes combined with various forms of neuralgic headache, nausea, depression of spirits and general derangement of health, the practitioner should always think of disease of the accessory cavities of the nose, in the first place of the antrum.

(To be continued.)

EXTRACTION.*

BY F. E. BATTERSHELL, D.D.S., NEW PHILADELPHIA, O.

* * * When the victim for the ordeal presents himself our Ideal Dentist takes and develops his size by the "instantaneous process." If it be a person who has suffered long enough, or hard enough to persuade his unwilling feet to carry him all the way and up the winding stairs, but whose resolution has made one amendment for each step on the ascent, Dr. I. manages to seat Mr. Faint Heart in the chair of execution, with more gravity and as much ceremony as a sheriff's oath affords, and with quiet exhibition of skill, he removes the offenders with so swift a *habeas corpus*, that the irresolute sufferer can have time and reason only to rejoice.

If it be a nervous or delicate lady who applies for relief, she will be treated with very great delicacy, seasoned with such celerity, that she finds herself seated in "that horrible chair," wondering at her own (?) new found courage ere her contending emotions can come to the focus for backing out and wanting to be persuaded. Leaving the chair she is charmed into the belief, by his gentle skill—and nitrous oxide—that the dentist is not a butcher, as she feared, but an artist in whom a secure trust may be reposed for life beyond the process.

We submit that upon the proper control of the patient success largely depends; therefore, perhaps, the best test for budded qualities of this fruit may be found in a case of a timid, crying child, who cannot have comfort and will not give peace until the tortured jaw is relieved by an artificial shedding of teeth. The

* Read before the Ohio Valley Dental Society.

child is always accompanied by one or both parents—likely the mother, plus several of her friends who, with a laudable desire to save the operator trouble, attempt by coercion to cause the shrinking child to submit. They magnify the difficulty by as many diameters as the heads of the sympathizers enumerate. Our specimen will first use his tact to relieve the frightened object from its magnifiers of distress. This most delicate task accomplished, he will begin with gentle words and caressing touches to soothe the child's fears; and when its emotions are sufficiently subdued, he will, with faithful eye and assuring touch, promise that whatever shall be done will be begun only with its consent, and that no trick or deception will be practiced. This is necessary, because the child has been imposed upon from the cradle, taking castor-oil for honey, etc. Thus gaining the child's favor, "haste is made by going slow."

His simplest method in a large number of such cases is to find how far absorption has advanced in the roots of the affected tooth or teeth, and if he is quite sure they are sufficiently loose, he will, at the conclusion of the examination, extract by pressing them outward or inward as they seem to yield. This, if mixed with an equal part of pleasantry, will be regarded by the child as the drawing of the "first heroic blood."

When all conservative means have failed and, to prevent deformity or disease of the denture, the occasion for extraction is imperative, the child is placed in the chair with enough "kinetic energy" to overcome its "resistance," and an anæsthetic is administered. Its crying and struggling will only hasten the effects of the drug, and resistance will soon cease, when the teeth may be carefully removed, leaving no other remembrance than the pleasant sensation of falling asleep, as a result.

The specimen just handed down to you, we presume has been handed around until it is consumed by the sampling; therefore, advancing, we gently open the office door of another who is in the very act of extracting, and it is a bulbulous (exostosed) root of an inferior bicuspid. He knows the bulb is there, for by his intimate acquaintance with the forceps, his sense of touch has been extended through to the apex of the root. With a firm grasp he is pulling hard and rotating, to find the widest and weakest point in the alveolus, through which the ball is sprung, and swiftly seizing another instrument, he, for an instant, looks

up and—sees you watching him; but remembering that each and every one of you is equally wise and guilty, he proceeds, as I shall do, to finish extracting, to make some friendly remarks.

If the teeth have been removed to relieve a crowded denture, they should be packed with cotton in a small pill box and numbered upon the lid. A memorandum should be made of the numbers in a book under the head of "Teeth for Reinsertion." At your leisure remove nerve, fill and repack ready for use.

If the teeth have been removed for "cause," and are to be replaced by artificial substitutes, those the least decayed should be selected, cleaned, and filed by dropping them in an old envelope, sealing it with mucilage, and upon the reverse side place name and address of person, with remarks. If the case is singular in bite, a wax impression should be taken of anterior teeth, a model constructed and enclosed with the teeth. This file will serve as a guide for size, shape, color, and arrangement in selecting the teeth and constructing the artificial denture.

For this common 25 or 50 cent incident of practice it may be safely claimed that, for the amount of nerve and skill required, it oftentimes equals those surgical operations for which parallel praise and fees are expected.

And now we will knock off an old chestnut that has been dangling before our eyes *da capo*. "Should we *ever* extract?" Well, hardly ever; but when this exception occurs for the rule the work should be performed with the utmost faithfulness and skill. At the beginning of a career no other professional services will so quickly attract the attention, good-will, and patronage of the public, as skillfully executed extraction.

ELEMENTS OF SUCCESS.—Social, professional, physiological, and mechanical elements, combined, insure success.

Dentists are classed with the patients and practice that give them support.

The way to success is open and upward, with ample room above.

Progress is the outcome of associated efforts in the higher grades of practice.

Never limit the possibilities of others to the inability of self.

Stand firmly upon the foundation of true merit, without building upon the demerits of others.

Reading presents to the mind many theories: discussions help to obtain facts; clinical instructions are seldom forgotten. Society membership is indispensable, socially, professionally, and protectively. In a literary way, read and take notes, reflect and record facts. In operating, regard each tooth as a patient; diagnose physiologically, prescribe with chemical adaptability, manipulate with mechanical accuracy, and there will be "no such word as fail."—DR. S. B. PALMER, *Int. Jour.*

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

IMPRESSIONS.*

BY PROF. W. H. DORRANCE, ANN ARBOR, MICH.

A HACKNEYED subject, and full of stables in which to hitch hobbies.

Those who can take first class impressions in all sorts of cases and with all forms of suitable material, may be spared the time and trouble of reading this and succeeding articles on this subject, in which it is the intention of the writer to present well considered principles and simple methods for the guidance of those who do not consider themselves comprised in the above named category.

It may be safely stated that probably not more than ten per cent of all impressions used in practice can by any stretch of the imagination be allowed to pass muster as approaching perfection, and it certainly cannot be claimed that a perfect impression is too good, whatever the purpose of its use, and anything, however little in itself, that will aid in securing an approach to perfection, any method, plan, wrinkle, that will help attain this much-to-be-desired result will be worth considering, however trivial it may appear.

The object for which an impression is taken should determine not only the method employed—or rather, more strictly speaking, the manner of its taking, but also the choice of materials, so the manner and the material should receive careful consideration.

The impression materials treated upon in this series of articles are as follows :

In hastily considering the proposition to occupy occasional space in the JOURNAL on subjects pertaining to Dental Prosthesis, the thought of taking up the subject of impressions occurred, and was stated, but the present plan was not then matured, so that the practical subject matter of this article appears out of what might be considered its regular order.—W.H.D.

Plaster of Paris;
 Modelling compound;
 Wax (pure and compounded);
 Gutta Percha (pure and compounded);
 Clay.

The objects for which impressions are taken may be enumerated as follows:

Models for—Partial artificial dentures on plastic bases;
 Partial artificial dentures on swaged metal bases;
 Full artificial dentures;
 Crown-work; Bridge-work; Caps for simple fillings;
 The study of cases of irregularity;
 The construction of appliances for such cases;
 For cases of fracture.

(The above list is general and may be classified to suit the character of individual practice.)

A brief consideration of impression materials will not be out of place, a more full study occurring as the individual material comes to be treated upon, it being premised that in all cases the material chosen is to be carefully handled with an intelligent appreciation of all its characteristic qualities, whether good or bad *per se*. A general principle essential to success may here be laid down. In all cases only the smallest possible amount of whatever material, should be used.

Plaster of Paris under favorable conditions is capable of receiving sharp impressions of the most minute markings and of the most severe undercuts, enabling these to be taken where the use of any other material would result in failure; when properly prepared and used it produces no distorting pressure and in event of its fracture, the lines of fracture are usually so sharp that it is not difficult to assemble the pieces; When in proper condition to introduce into the mouth it obeys the laws of fluids and finds its way without pressure to all parts of the surface involved, unless air is enclosed. Per contra, in cases where the secretion of mucus or saliva is abundant it will not receive a sharp impression; it is not useful where it is desired to produce distorting pressure; it expands, more or less, in setting according to the manner in which it is prepared and the material used to secure its more rapid setting; the distortion of the piece from this cause is marked

where the thickness is not fairly uniform. In event of retching, in its semi-set condition it becomes a source of considerable annoyance to both patient and operator, and in any event its use is inelegant as compared with other materials; its unskillful use has produced a not-easily-effaced prejudice in the minds of intending patients against all impressions.

Modelling compound, *of good quality*, is easily prepared for use; receives sharply the most minute markings; when in a proper condition for removal is sufficiently elastic to spring by somewhat bulging or malplaced teeth; by proper handling it can be made to displace the softer parts to some extent; the border can be readily modified while still warm, and when cool the impression can be readily carved; there is no change by expansion or contraction after cooling to ordinary temperature; it gives the least annoyance to the patient and is the more elegant of all impression materials for common use in all cases that present no unusual difficulty. Per contra, it changes the shape in the mouth unless fully supported by proper means; it must be carried into deep undercuts or about a protruding border by subsequent pressure, and in such a case as that of a lower jaw with the crowns of the molars much inclined inward, is quite liable to distortion in removal.

Pure wax, when properly worked and handled (for there is a difference in the terms as here used which will hereafter appear,) is very plastic and takes a beautifully sharp impression, and is very pleasant for the patient; it contracts slightly on cooling to ordinary temperature, a quality which makes it exceedingly valuable in a certain class of edentulous cases, and though quite plastic it requires some pressure to force it in place, making it valuable where it is desirable to displace soft parts to obtain a uniform seating for a denture. However, as it has no elasticity, it drags out of shape in cases where teeth are present in irregular positions, so that its use is limited, other materials being available.

The qualities which make gutta percha valuable for impressions are the extreme sharpness with which it receives an impression, its toughness, its elasticity and its contraction on cooling. This last quality, so desirable in some cases, makes the material difficult to handle, and it must be used in small quantity and mechanically held to the tray.

Clay is an exceedingly valuable adjunct, its peculiar feature

being that the impression can be cast in metal direct. Its uses will be presented hereafter.

To illustrate a simple method of handling plaster of Paris in cases where all or nearly all the teeth are present, the following typical case is taken:—Models are desired for the study of a case of protrusion of the upper teeth, and the impression is to involve as much of the border as the muscles will allow, so that the model may exhibit the direction of the teeth to the end of their roots.

The following items are to be borne in mind:—The change which takes place when water is added to plaster (hydrated calcium sulphate) and commonly known as “setting,” is a chemical change, two molecules of water being needed to satisfy one molecule of the calcium sulphate, (it must not be understood by this that two parts of water to one of plaster by measure are needed), which then crystallizes in a new form. Should there be too little water used the plaster is not “satisfied”—the “setting” is incomplete in whole or in part, and failure is the result: if too much water is used the change indeed takes place, but as only two molecules of water are needed to satisfy each molecule of plaster, that which is in excess is held sponge-like and the resulting crystals are held apart, the plaster is not so strong, and a greater change takes place during the process of setting than would occur with proper proportions. An impression is more likely to retain its integrity of shape, and is more easily handled where it has uniform thickness as is consistent with manipulation. For obvious reasons it is desirable to hasten the setting of plaster used for impressions, and out of the number of materials which may be used to accomplish that result, much experimentation has determined that powdered potassium sulphate is the very best setting agent, as with its use plaster changes the least in setting. Experimentation has also shown that the best results are invariably gained when the following method for mixing plaster is used:—Take of tepid soft water (cold water retards setting—hard water retards setting—) a sufficient quantity, add and dissolve the potassium sulphate in such quantity as experiment with the particular lot of plaster has determined—say what would lay piled on a quarter of a dollar—add the plaster by small quantity until it raises in a little mound above the water, as that mound begins to settle pour off the standing water and in a moment stir only sufficiently to make the mass of uniform consistency, when it is

ready for use. Plaster too thinly mixed (the usual formula is "to the consistency of cream") and much beaten so as to bring it to a condition for handling, is not only weak when set, but has measurably expanded. Quick setting plasters are weak and unreliable. (Plaster—once good—that has failed by age and exposure, may be sometimes restored by heating in an oven at ordinary baking heat.) Plaster for impressions may be colored, if so desired by the addition of any earth pigment in small quantities, though such addition weakens the plaster. (Where alcoholic solutions of color are used, the purpose is apt to be partially defeated by the plaster of the model taking up the color. •

The patient being properly seated and prepared, a tray is selected which invests the teeth with a uniform space of about one-eighth of an inch from their buccal and labial surfaces. The tray must be not only clean, but as smooth and polished as when it came from the maker's hands, especial care to keep them so, being effort well expended. The tray selected for the case in hand is Ash's "No. 0. X A" (*i. e.*, it is an extra length of No. 0,) and is of the variety long ago misnamed "wax trays," misnamed as it is suitable for any material, its special use being rather that of taking impressions of cases of full or nearly full natural dentures. This tray is formed from Britannia-metal plate, cut and formed to shape and soldered, and can therefore quite easily be modified in shape, and is the best make of tray of its variety in the market. It has one fault—the raised portion in the centre is too broad in its curve (so that it cannot be easily used for a contracted arch), a fault which the maker could easily rectify. This tray has been modified in its border by the addition of a strip of pure tin (not "tin plate") rolled to the same thickness as the metal of the tray) cut to the proper curve and soldered with a fusible alloy (a strip of Britannia metal would be more easily handled). For modelling compound or wax this additional strip would be in the way. If this tray could not thus have been made easily suitable, a rough impression would have been secured and with the model for a guide, a tray built especially for the case.

Now it must be borne in mind that *the* feature of this method of taking such an impression, is, that for the easy and safe removal of the impression from the model (and the mouth, should its condition render it necessary), the impression shall have two weak

lines, and all other portions being of sufficient thickness (say that adopted for the border—about one-eighth of an inch) for strength and for ease of assembly in case of fracture. One of these weak lines is easily obtained by simply carrying the tray up until the major portion of the teeth-cusps touch the bottom of the tray; the other, located along the medium line, is secured as follows: A portion of beeswax, the size of the first joint of the thumb—more or less as the case requires, is softened and pressed to the central portion of the warmed tray, and an impression of the arch from the inner surface of the anterior teeth to the posterior border of the tray obtained, being careful that the tray is carried up until the teeth strike it; remove the tray from the mouth and trim the impression with a warmed knife down to a thin wedge extending the length of the tray in the centre, as illustrated in Fig. 1.

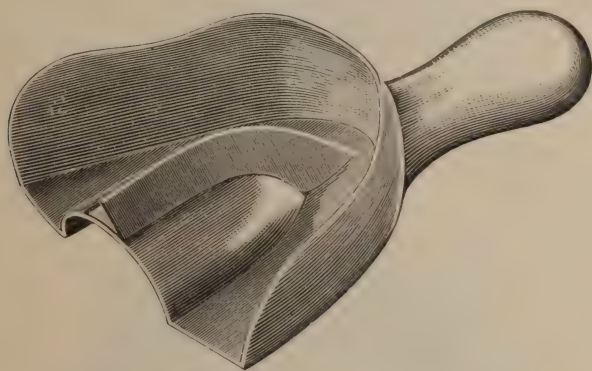


FIG. 1.

This wedge of wax should barely touch the arch when the tray is in position, and leave quite a little space between it and the arch and teeth elsewhere. Now, the plaster being properly prepared, instead of carelessly filling the tray, let the smallest possible amount be spread uniformly over the surface and at the border of the tray, and with the patient's head inclined slightly forward carry it into the mouth and its posterior border first to place, thereby preventing an overflow of the plaster and thus also keeping the impression well under control. When the surplus plaster will break with a sharp fracture without the least crushing of its edge, it may be removed from the mouth, in not too difficult cases without fracture. Should it be—by reason of

extensive mal-position of the teeth—so securely locked as to render it difficult to remove entire, the tray may be taken away and the border taken out in two pieces by carefully introducing the thumb and pressing upon the border on either side, letting the pressure be downward and outward, after which the central portion may usually be removed entire. It is well at all times to have pair of foil carriers at hand so that any small fragment it is desirable to save may be easily removed. Now, as the tray is smooth and clean, the cleansed pieces of the impression are easily assembled therein, and the case proceeded with as if the impression had come out entire. In order to obtain the best results impressions should be filled soon after being taken, and removed from the model as soon as it is well set, say within an hour. Cleanse the impression from mucus and saliva, should there be any adhering thereto, let it be well saturated with cold water while preparing the plaster for the model, and when ready to pour see that all surplus or standing water is removed by blowing sharply into the partially inverted impression, or better by a large, soft camel's hair brush. In filling, flow the plaster carefully from one heel of the impression in such a manner that the slight film of water is carried before the incoming plaster, taking care that none is enclosed, and that the fresh plaster *does not*

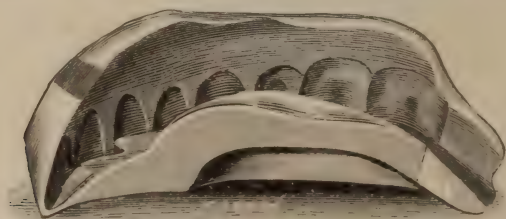


FIG. 2.

cover the border when it is full. Should it be desired to give the model the shape of that illustrated, after having filled the impression, build upon the glass slab a small mound of the now stiffening plaster, carefully press the inverted impression upon its surface, see that it is level, and with the spatula shape the base as desired, taking care not to cover the border of the impression. When the model has well set the tray is easily lifted off after dipping for an instant only into water, the wax septum is removed, and the *impression alone* now dipped for a moment

into boiling water which expands it so that it readily parts from the model. The border beginning at one heel is now easily pried off with an outward motion, and when off the central portion is removed by pressing inward from either side, when it breaks at the central weak line, Fig. 2, and readily parts from the model in two pieces as shown in Figs. 3 and 4, which are from a model from which one-half of the impression has been removed.

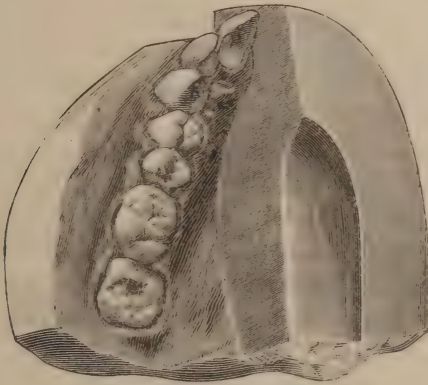


FIG. 3.

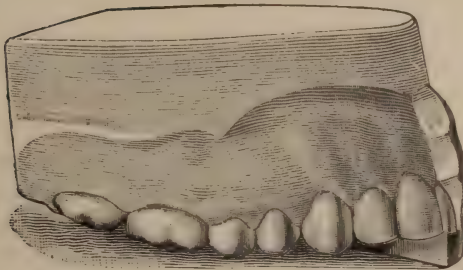


FIG. 4.

The application of this method to cases of partial dentures will be given in a future article.

NOTE.—As the lower jaw of this case is normal in every way and presents no difficulty, the model for study was made from an impression in composition, hence is not illustrated. In fact, the upper jaw could easily have been taken in the same material in this case, but was used because altogether available for the purpose of illustrating this portion of this article.

MATERIALS FOR PLATES.

BY PROF. L. P. HASKELL, CHICAGO.

THE question has been asked me, "*What is the best base for artificial teeth?*"

The first point to be considered is, what are the requisite qualities for a material for a base?

1st. A material that will not be affected by the secretions of the mouth.

2nd. A material that will not produce injurious affects upon the tissues of the mouth, or affect the system in any respect.

3rd. A material which has the requisite strength to resist the strain to which artificial dentures are often subjected.

4th. A material which can be manipulated with facility.

5th. A material which can be readily repaired and at a reasonable expense.

I will take the materials commonly used, in the inverse order of value.

First on the list I place *Celluloid*, and which, after five years use, trying to convince myself that it was a valuable material, came to the conclusion that it was the worst material ever used for dentures.

My objections are, first, it is a vegetable base, and consequently a non-conductor of heat; the result of which is, that the membrane is kept in an inflamed condition the more so when the plate adheres well to the palate so that the air cannot circulate under it. The second result of this retention of heat is the disappearance of the process to such an extent as to often leave nothing but a ridge of membrane, flabby, pendulous.

The second objection to it is that in many mouths it absorbs the secretions and consequently becomes very offensive. I know it is claimed that where this work is put together by the dry heat process and with metal surfaces, the results are different; and so they are when first worn, but this effect (which is simply closure of the pores of the material) is soon destroyed by the wearing off of the surface in mastication and cleansing.

The third objection is the difficulty of repair, and the worst

feature of this is in the dark line that is formed around the necks of the teeth.

The fourth objection is found in the difficulty of keeping clean. It cannot be done without the use of pumice or other powder, and this wears away the surface; the wearing of the surface in mastication is such that the heads of the pins are commonly exposed, and I often have seen holes in the plates from the same cause.

Next on the list is *Vulcanized Rubber*.

While I do not consider this material an unmixed evil, it has serious objections, as follows: Like celluloid, being a vegetable base, there is the same objection of non-conductibility, causing inflammation of membrane, and also the other more serious objection of *wasting of process*. This, it should be remembered, is not additional *absorption*, but owing to the presence of undue heat, the waste material is not replaced as elsewhere in the system.

Also, like celluloid, it is difficult to keep clean, but not to the same extent. Otherwise this material serves a good purpose. Thousands would be unable to afford artificial dentures were it not used. In the attachment of teeth to a gold plate, in full sets or partial lower anterior teeth, I could not dispense with it, for the use of full sets of gum teeth, *soldered* to the plate, is far more objectionable.

Next on the list I would place *Silver*. Not coin silver, but pure silver, alloyed with platina, makes a good partial upper, when the patient cannot afford gold. It is not admissible for full sets, as rubber cannot be vulcanized upon it. *Aluminum*, when *cast* by the Carroll process, is undoubtedly a good material, but the swaged plates for general use I do not think are advisable. It is often the case there is iron in it so that holes are eaten through; and it can be repaired in case of cracking only by the casting process before mentioned. The casting process is a difficult one and few have made it a success.

The *cast metal* plates (Watt's, Weston's, Reese's) I have used only for lower sets. While these metals are unobjectionable in the mouth so far as I can discover, and securing nice adaptation, my success with them has not been flattering, and I have used the method for several years. There seems to be a yielding of the process and necessity for altering of the margins so long as they are worn, and I have ceased to use them.

Porcelain is an unobjectionable material for plates, but the method of making these plates is such that a long experience is necessary in order to achieve much success and then it is not possible to secure truly artistic results in the arrangement of teeth and gums and securing correct articulation. Having been familiar with the process ever since its introduction by Dr. Loomis in Boston, having made sets of it, and having seen many cases in wear, I have yet to see one that covers all the requirements of an artificial denture.

Platinum is a metal that is entirely unobjectionable in the mouth and the only one free from alloy. It can be used for full sets with rubber attachments, for partial sets and soldered work, as well as for Continuous-gum work.

Gold for all purposes, except as a base for Continuous-gum, is *par excellence* the material for the mouth; for partial sets the best of anything used; for full sets with rubber attachments next in value to Continuous-gum.

Last on the list, but first in value, stands Continuous-gum. It has stood the test for 35 years, the strongest, most durable, most natural in appearance, the most cleanly and healthy of anything worn in the mouth.

I must, however, call attention to the latest "fad," "Ward's Electro Metallic Plates." They are unexcelled in one feature, and that is in producing a perfect fit to the model, and here their merit ends. The metal is deposited by electrolysis, and consequently the plate is *granular* in its structure, and so will never endure the strain to which many dentures, especially partial sets, are submitted, and results in cracking of the plates, breaking off of teeth and clasps. As the inventor says they must never be subjected to a red heat, these breaks cannot be soldered. The only way they can be repaired at all is to solder as you would a tin pan!

Not only this, all these plates I have seen had such an infinitesimal amount of gold deposited upon the silver, that in polishing the rubber attachments, the silver was exposed and the sulphur in the rubber turned the silver black. This work will not stand the test required of an artificial denture.

BLOCK TEETH *vs.* CONTINUOUS-GUM.

BY DR. DAVID GENESE, BALTIMORE, MD.

AN article appeared in one of our journals lately about block teeth, advising them to be first broken then ground to the articulation, filled in with body and burned again, the writer claiming to be able to adjust his work having the appearance of continuous gum.

I would ask, if in the first place he is sure of the cleavage being just what is wanted, and how many blocks would be spoiled; next, what of shrinkage, not only in the new body but in the blocks themselves, they having to pass through the furnace several times? How does he depend upon watching the color, and where does he obtain the strength to sustain the work in place while mounting on either vulcanite or metal?

It would be far easier to make the work in the manner named below and be sure of natural appearance, articulation, and strength, that mounted single teeth can help us to give our work, also insuring the fastenings for rubber being as we want them, and in metal work having our backings already in place for soldering.

For this class of work I prefer Dr. Ambler Tees', gum enamel and body. The principal attention required is allowing for shrinkage, and taking care that no displacement occurs in placing the blocks on the slabs.

When the models are in position for mounting the teeth, the bite being assured, rub into them some fine powdered French chalk, using a rabbits foot for the purpose as it prevents injury to the model.

If for vulcanite, burnish over the part intended to have the block fitted, a sheet of tin-foil No. 60, let it lap some distance beyond the line required for the block and come well up the teeth, keep this in place by attaching the ends with hard adhesive wax, mount the teeth in place and affix them with strong wax only to the palatine surface of the tin plate. It is now ready for the first body. This should be mixed only as required with a solution of gum arabic, and the consistency of thick paste; work it thor-

oughly into the spaces between the necks of the teeth and plate of tin, and press well home with a linen cloth of fine texture having no fibre; when sufficient gum body is on the work let it dry for ten minutes when it will be found to assume a smooth surface and well attached to teeth and plate; it is then ready for contouring and festooning the gum; sharp knife edges should be used to the margins and festooning with round pointed spatulas, as when in this state the bisc is like stiff dough, easily impressed and keeping the form given to it, but not easily cut except with sharp edge tools; place in a warm place to dry (not hot), in an hour or two it is hard enough to remove, or if a slender piece enamel before removing, a difficult piece of long bite and of more than four teeth should be fired first and enameled after as this gives an opportunity to correct any irregularly; grind edges sharp and clean, etc.

If enameled and baked at one firing it will be found easy to remove the tin and wax by heating the lower part of the teeth, when the tin will come away, any little wax remaining does no harm as it is absorbed in the body and burned out.

It is now necessary to put the work on a slide with powdered silex, just loose enough to take the form of the block, and burn as for continuous gum.

In large and deep cases mount the teeth as described, obtain a fire-clay tray, fill with fine silex and bury the piece in it, having a test piece visible for examination. The bisc is done when of a straw color without gloss, if over burned the brightness of the enamel is spoiled.

Blocks intended for metal work want more care in mounting as the plate must be put under first, the teeth ground and backed with platina, and then proceed as above taking care that the backs touch the plate all the time.

Sometimes it may be necessary to give more protection to the block, and it is advisable to burnish very thin soft platina plate having holes punched into it, or what is better, platina gauze (obtainable at C. Ash & Sons) which greatly adds to the strength of the gum added to the teeth.

In complete sets it is necessary to add two layers of tin, mount the whole case in the first body, let it dry then saw through sections leaving the six front in one, two bicuspid and a molar, and the last molar by itself. Burn these in the tray as

before described then remount them on the model adding new body where shrunk and attach the blocks together, burn again, enamel the whole, supporting the base and palatine arch with a mixture of plaster, pumice and asbestos. The case made in this way is easily mounted on rubber and will bear the strain of vulcanizing, while a metal plate mounted in this style is equal to continuous gum with the advantage of being easily repaired if accidentally broken and leaves no crevices for accumulation of food products in the mouth.

MECHANICAL ADAPTATION OF THE LOGAN CROWN.

BY LEVITT E. CUSTER, D.D.S., DAYTON, OHIO.

THE Logan and Parmlly Brown crowns coming under the head of those in which the pin is already attached to the crown, there remains to consider the adaptation of the pin within the root and the crown to the end of the root.

There are four mechanical principles in the pin in its relation to the root. First, the length of the pin and the surface thereby presented holds the pin in the root with that force which is required to overcome the friction against the closely fitting walls of the root canal. Second, the pin acts as a lever with the fulcrum at the edge of the root canal whereby the crown is held in a perpendicular position. Third, the pin projecting from the crown into the root canal prevents any sliding motion of the crown upon the end of the root. Fourth, the pin, if rectangular upon cross section, prevents rotation.

Omitting the question of the cement used in setting the crown until later and dealing with basal principles only, no other force than friction holds a conical pin in the root of an upper tooth of a person in an upright position. Friction is the important factor in the first relation, and it is the development of this force upon which depends the degree of strength by which the pin is retained in the root.

Friction is increased by enlarging the surfaces of contact, by increasing the pressure, or by making the surfaces rough, and often by all three combined. To increase the surface of the pin, since the narrower dimensions are restricted in proportion to the

diameter of the root, it can only be lengthened. The diameter of the root varies less than the length and on that account a pin of a certain size for a certain root has been established, which we find in these crowns. Since then the increase of surface of the pin can be only in the length, the longer the pin, the stronger will be the attachment. When the crown is properly ground and fitted to the end of the root, the pin will have been lengthened enough for the strength required, and it is only in extreme cases that the pin should be shortened with the crown.

Friction being also increased by pressure the pin must fit tightly within the root canal. Unfortunately, under the circumstances, for the best proportions the pin must be cone-shaped, when, if it is once started from the canal this means of increase of friction is lost. It seems like a waste of words to say that the tighter fitting the pin within the canal the stronger will be the attachment, yet without pressure neither extension of surfaces nor their roughness can furnish the condition for friction.



The third means of friction is obtained by barbing the pin and grooving the root canal with an oval bur. This method is only to be used when the canal has been enlarged by decay or when a mistake has been made in fitting.

The second principle—the pin as a lever, is one in which the proportions of both the pin and the root are well adapted. The maximum of strength of a lever must be at the fulcrum and the farther the power or weight recedes from the fulcrum the less thickness is required at the end of the lever. The pin being tapering with the thickest part at the neck of the root, which acts as the fulcrum, conforms very beautifully to this law. Now the neck of the root being the fulcrum it must have strength enough to sustain both the power and the weight, hence the importance of preserving the thickness and strength of this portion of the root; no more should be taken from this part of the root than will allow the pin to go in place. The pin should especially fit at this point since any space that has been made is at the expense of the root, and is afterwards to be filled with a foreign material, which with our present resources, is never as dense as the dentine of the root. Except the close adaptation of the crown to the root, more importance attaches to this point than any other. In this connection it would be well to state that the oxyphosphate cement which is used to set the crown, liberates

free phosphoric acid during crystallization. This, as shown by Dr. Harlan, is a penetrating escharotic. So it is desirable also on that account to preserve the thickness of the root walls. The author has seen a case of chronic alveolar abscess caused by enlarging the apical portion of the root canal until the cementum was almost penetrated, and using oxyphosphate cement in setting the crown without protection at the thin part. The sinus closed by cutting out and lining this part with chlora-percha before resetting the crown.

The pin prevents the crown from sliding about upon the end of the root, provided it snugly fits the opening in the canal. The porcelain of the crown is fused about the pin so that it is all one piece. The pin projects from the crown into the root canal and is free to move about until it meets with resistance against the walls of the canal; the nearer these walls approach one another, the sooner the pin meets a resistance until it is bound upon all sides, when farther movement is prevented. Hence the importance again of having a good fit at the neck of the root.

Finally, a rectangular pin prevents rotation. This not only requires a close fit at the corners, but also along the sides of the pin. The root canal must be rectangular to correspond. The center of the pin is the axis around which the sides and corners would revolve. The corners being farther distant from the axis than the sides, they impinge upon the dentine which is nearer the center along the sides. Hence the importance of having a close adaptation in a corresponding rectangular root canal.

We will now consider the relation of the crown to the root with a view, first of a strong adaptation; and, second, of decreasing the leverage. To this end the study divides itself into the relations existing at the joining of the crown to the root and the relative proportions of crown and root. The end of the root may be perfectly flat or it may have an uneven surface, and it is the preparation of the end of the root by making an irregular surface to which I call especial attention as a means of strengthening the attachment of the crown. If the root is prepared as it should be, by cutting it off and trimming quite to that point where the gum is attached, the circumference will present a waving appearance. In the case of a lower incisor, the labial and lingual edges of the root would present this curve , while in the mesial and distal edges it would present just the reverse, .

In other words, the antero-posterior view would present a concave appearance, while a mesio-distal view would present a convex appearance. By giving the end of the root an uneven surface like that just described and fitting the crown to correspond, two things are gained, the crown is prevented from sliding about upon the end of the root, and the leverage upon the crown is decreased. These projections from the crown into corresponding depressions in the root, or the projections from the root into depressions in the crown, act in precisely the same manner as the platinum pin of the crown projecting into the root canal as a means of preventing any sliding motion, except in a less degree. In this case the surfaces of these projections are not at right angles to the direction from which a sliding force would come, so that the resistance is changed from direct resistance into friction which increases as the elevations become more marked and their surfaces approach a perpendicular to the end of the root or crown. Since, also, the surface along the side of an elevation is at an angle from the plane surface of the end of the root, if the crown is moved laterally it must elongate and pull the pin from the root canal, so that in this manner a firmly set pin would prevent a sliding movement of the crown upon the end of the root even if the pin was not a perfect fit at the neck of the root.

By this irregular surface at the joining of the crown to the root the leverage to which the crown is subjected also is decreased. The nearer the fulcrum is to the power, the more power is required to lift the weight. The fulcrum is at that part of the root upon which the platinum pin first bears, or if the root has projections or elevations which are received into the crown, the fulcrum is at the summit of the highest projection. Now if the opening of the root canal can be left high or these undulations are very marked, the fulcrum, as it were, is brought farther towards the end of the crown, which now represents the lever, and therefore there will be required more force to move the crown. In other words, the crown will be strengthened.

The shorter the lever the more force is required to lift the weight. Now if we represent the crown as a lever (for it acts as such in resisting force) and place the fulcrum at the end of the root next to the crown, it is evident that the shorter the crown in proportion to the length of the root the more force will be required to move the crown. In other words, the farther from

the end of the crown the joint between the crown and root is removed by shortening the root, the more leverage is the crown subjected to, and therefore the more easily is the crown dislodged.

The practical application of this phase of the leverage is never to cut any more of the root off than is necessary to hide the joint between the crown and root. If there is no articulation, rather have the crown too short than too long, remembering that the less there is taken from the root and the more from the crown, the stronger will be the completed case.

When the crown is subjected to severe lateral strain, unless the irregularities of the root extend for some distance into the crown, besides the tendency of the crown to slide upon the end of the root it will bear upon the opposite side of the end of the root and the pin will be subjected to a pulling strain, for the crown acts as a right-angled lever with the fulcrum at the angle which in this case is the diagonally opposite portion of the crown which bears upon the root. Now the farther from the weight (the pin) the fulcrum is removed the more power will be required to lift the weight. Therefore the larger the diameter of the end of the root, the crown also being the same size, the more force will be required to dislodge the crown.

Heretofore we have been dealing with principles involved in the crown as a whole in its relation to the root, and we have seen that to obtain the best results—first, pin must be left as long as possible; second, the pin must be tightly received into the root canal, especially at the neck; third, the end of the root should not be flat but prominently uneven; fourth, the root should be trimmed as little as possible both in length and circumference; and fifth, the crown should rather be too short than too long. Now no operator can make a perfect fit of the pin within the root or of the crown upon the end of the root, but there are different ways by which a fit can be approximated.

METHODS.—The root having been treated and the canal filled, it is to be shaped for the reception of the crown, keeping the above principles well in mind. After dressing off the root even with the gum with the corundum wheel, by the use of the Ottolengui root trimmers and small corundum points, the root may be dressed off to that point to where the gum is attached. Care is to be taken that the labial and lingual aspects especially are trimmed to this point, while the other two sides may stand as

much higher as the gum will allow. By this means the irregular shape is given the end of the root, so that when the crown is fitted, from in front it appears as resting in the end of the root, while at the side it appears as a saddle upon the root.

Frail roots or those in which decay has progressed so as to enlarge the root canal even quite to the cementum, may be strengthened and prepared by banding the circumference with a gold band and strengthening the inside of the walls with copper amalgam. Instead of the usual method of preparing the gold band, after having fitted the band, at about the middle of the short diameter and the middle of its width, I punch in with the S. S. White contouring pliers, one projection on one side and two on the opposite side. The depressions left in the outside of the band are flowed full of gold solder and dressed off. The band is replaced on the end of the root and the places where these points touch, being noted, the band is removed and depressions cut for them as deeply as it is desired the band shall go on the root. The use of these points is to retain the band in place after the crown is cemented on.

After the gold band has been cemented in place a gutta-percha plug, the size and shape of the pin in the crown, is placed in the root canal and copper amalgam is packed in about it and against the walls. At the next sitting the case may be proceeded with as usual. Instead of using amalgam to brace the walls, Dr. A. O. Hunt has recommended for this purpose a very thin ribbon of platinum burnished within the walls.

For preparing the root canal for the reception of the pin, a broach or pointed root canal reamer must lead the way so that the Ottolengui reamers which are next to be used can readily follow the canal. Enlarge with the small size until the crown touches the root. Having bent the pin, if necessary, so that the crown will assume about the proper position when set, grind off those points upon the crown which are plainly seen to strike the root. The pin being cone-shaped, as the fit becomes closer, the pin becomes tighter in the canal; to relieve this while fitting, instead of enlarging the canal with the reamers it has been my practice to run a small fissure bur up and down each corner of already oval-shaped root canal which converts it into a rectangular canal in which the pin more perfectly fits and thus rotation is prevented.

When the crown is so closely fitted to the end of the root that it becomes difficult to see just where it strikes first, I have a method, simple as it is, to present, which has been the source of considerable satisfaction in securing a perfect fit. With the uneven end of the root to which to adapt the crown it was found to be very difficult to obtain a fit. Indeed the difficulty increases with the unevenness of the end of the root. To obtain a close joint take the Ash & Sons tooth-wax, upon which the teeth come (White's or Justi's will do as well, but I prefer the above), hold the end of it over the flame and drop a little about the pin upon the crown; before this is hard press the crown in position upon the root and remove. If the crown has been dry and the end of the root wet the wax will come off with the crown when there will be seen an impression of the root in its relation to the crown. The points of contact will be shown where the wax is wanting, and its thickness at the thickest part will tell just how much is to be ground from these exposed places. Not only does the wax tell where the crown and root touch first, but it also shows the circumference of the end of the root and how the crown is to be shaped to correspond. By repeating these impressions and dressing the crown as indicated a very accurate fit can be obtained. As the fit becomes extremely close a darker wax, as Justi's, may be used.

Even with the method given it is impossible to secure a perfect fit, and if the pin were inserted tight enough to resist all the strain of mastication, in time there would be danger of splitting the root. So the use of an adhesive cement is certainly indicated, not only to fill up the space between the crown and root, but by its adhesive property to unite the two parts as one. The oxy-phosphate cement mixed to that consistency where it adheres to whatever it touches, is undoubtedly the best material for this purpose. In setting the crown, touch the gum around the root with a solution of perchloride of iron which will prevent any weeping from it, and it will be easy to maintain dryness of the end of the root as well as the canal, so that the most important part of the cement will be protected from moisture until it has crystallized.

AN IMPROVED METHOD OF CROWNING ROOTS.

BY R. P. LENNOX.

IN pivoting a tooth after the manner of the accompanying specimens, the root is prepared and the apex sealed in the usual way, care being taken not to make the canal larger than ordinary pivot wire until after the cast is taken. A cast is now taken of the mouth and a canal drilled into it to correspond with the root canal, the direction of which may be obtained with sufficient accuracy by observation merely, no special tray being necessary. An opening is also made in the front of the cast about a quarter of an inch from the edge of the root so as to meet this canal. The purpose of this opening will appear later.

An ordinary flat tooth of suitable size and color is now ground to the model, and a back prepared for it in such a manner that when the tooth and back are placed in position upon the model, the back will exactly cover the centre of the root canal. The tooth and backing are then waxed to the model from the front, and a strip of very thin plate, rather broader than the tooth is deep, is bent round into a band to fit the root and backing. This band is next soldered to the backing in such a way that its extra width leaves a certain trifling margin at the lower edge, by the cutting away of which the tooth and band can be let down on to the model like an ordinary tube tooth. This being done, the upper edge of the band is next clipped and filed to the shape desired. A pin, which is best made of platinum wire, is next prepared, and a slot sawn in it lengthwise from the end which is to be outermost in such a manner that, when the pin is in position in the cast, and the tooth and band are applied, the backing of the tooth fits readily into the slot in the pin, which may, of course, be bent a little, if necessary.

This adjustment being made, the tooth is removed from the cast with the pin in position on the backing and the two are then soldered together. In making this removal, it is obviously necessary not to disturb the position of the pin, and the opening made through to the canal from the front of the cast will enable the removal to be made with the desired result. Lastly, a groove is

filed in that side of the pin, which will ultimately lie towards the inside of the mouth. The whole is then finished in the usual way and annealed, but not boiled in pickle, because the mercury of the copper amalgam to be afterwards used in the mouth will not act so readily upon oxidized solder. As a further precaution, the soldered parts may be coated with copal ether varnish. A trial is now made to see that the position is right, and the flat tooth is permanently attached to the backing by merely bending the pins.

The whole is now ready to be applied to the mouth. To do this, place some soft copper amalgam under the front part of the tooth and press the tooth into position on the root. On the tooth being withdrawn, the amalgam will be found adhering to it. Some suitable white-stopping is now put into the canal and the tooth again pressed firmly into place. Then the white-stopping is packed nicely round the pin and all that is superfluous carefully removed. Finally the band is filled up with copper amalgam by taking a very small quantity of soft to begin with, and packing it with a small piece of amadou, then squeezing the remainder of the amalgam in a napkin, building up with it and finishing with amadou. The work is now complete.

The advantages of the method lie in the simplicity of the work and the accuracy of the fit, arising from the ease with which the necessary adjustment can be made and the accessibility of the white-stopping up to the moment when, everything being satisfactorily placed, the tooth is finally built up with amalgam, which in its turn effectually protects the root and the white-stopping from moisture.

Further, the flat tooth being fastened to the backing merely by bending the pins is readily replaced in the event of a fracture.

Lastly, there is the advantage that the white-stopping sets with such rapidity about the pin, which is already immovably attached to the tooth that the patient is able to leave the surgeon with the work firmly rooted in his mouth.—*Jour. Brit. Dental Assn.*

FOR STRENGTHENING GOLD CROWNS MADE FROM THIN MATERIAL.

DR. GEO. EVANS uses prepared filings made from a thick piece of solder grasped in a vise, with a clean flat-plate file. The filings are allowed to fall into a box or upon a sheet of paper,

and a magnet is passed through them to remove any minute particles of steel detached from the file. To five parts of the filings is added one part of Parr's prepared flux or of finely vitrified borax. Solder prepared in this way is not only useful for strengthening crowns, but in fine soldering-work of all descriptions it is much to be preferred to solder cut in small pieces, as the fine particles separately take up the heat and fuse more easily. The flow of the solder also is under better control.

The prepared filings are carried in a dry state with a spoon-shaped excavator, and packed in position in the cusps or placed on any desired spot. The crown is then held in the flame of an alcohol lamp and slowly heated to a cherry red, which is sufficient to fuse the filings, which will melt down exactly where they have been placed. During the process the crown should be grasped on one side, at the extreme edge of the collar, between the points of small tweezers, and held in such position as to present a full view of the inside. The melting of the solder is thus instantly seen, when the crown should be quickly removed from the flame. If it is desired to strengthen the sides of the crown also, the surface of the interior is first dampened with a piece of cotton moistened with water on the end of an instrument, and a quantity of solder filings placed in the crown and shaken around against the sides. A portion will adhere evenly all over the damp surface, and the surplus is then dropped out, the quantity required in the cusps placed in position, and heat applied as described, when the solder will be fused evenly over the surface of the gold without melting the sides or materially changing the general form of the interior of the crown.

LABORATORY HINTS.

I ALWAYS keep, ready for use, a 6-oz. bottle of potassa alum-water; made by adding two or three teaspoonfuls of the potassa-alum to the bottle of fresh water. Use equal quantities of this and fresh water for mixing your plaster. It hardens the plaster, and keeps it from shrinking; and after vulcanizing, your plaster will *not stick to the rubber*.

To save time in taking an articulation, for a *full set* of teeth: After the impressions are taken, use a small wood peg on the anterior alveolar ridge, and get the width needed. After your

models and trial-plates are made, lay soft wax on the plates and press them down on some flat surface, and trim them. Now, take them off your models and place them together, as they should be, in the mouth, and take a pair of callipers and place one end *over* the trial-plates, and use the other on the peg, and trim the wax, until both agree in length, etc. When placed in the mouth you will need only to contour the wax to conform to the shape of the face.

After completing a full denture: Before inserting, and to save *much* after-annoyance, it is better to explain—especially to old persons—that their teeth will not stay in tight enough to eat with, by the suction; and that the suction (so-called), is only the adaptation of the plate to the ridge, etc., and that the plates are made useful, *only* by the contraction of the buccinator muscles, which holds them firmly while eating. Show them how, by laying your finger under your cheek, and using the muscles. This is the *main cause* why *old persons* have so much trouble with artificial teeth. Age has deteriorated the usefulness of the muscles. I know many patients that could do nothing with their plates until I had *trained them* to use these muscles.—DR. PENNEY, *Archives*.

TO PRODUCE A POLISHED PLATE.

DR. HARRY ROSE gives the following method: By taking a composition or plaster-of-Paris impression of the inferior palatal aspect of the case after the teeth are all mounted, and the case ready for the flask.

Getting a zinc model from the impression and obtaining a counter die by dipping it into lead or pouring the lead upon the surface of the zinc model.

A lead pattern is now obtained and a suitable plate of tin or meter metal is cut out and struck up to the model. This plate should accurately fit and cover every portion of the palate, and should overlap part of the crowns of molars and backs of front teeth.

When stamped up it is trimmed to the required size and adjusted to the case, to which it may be tacked firmly by means of a little wax. This is to prevent slipping or rising from its place when the case is being inserted in the flask.

After the case is flaked and before the insertion of the rubber, the metal plate may be rubbed over with a piece of cane or wood made soft at the end, using with it a little soap and whiting, in order to brighten the surface; then wash it out with hot water to make quite clean, and it is ready for the production of the polished surface on the rubber plate.

CARE IN MAKING ALUMINUM PLATES.

DR. J. G. TEMPLETON thinks swaged plates of aluminum better than cast-plates, and says it is important to keep lead and zinc away from the material, for if a particle of either of these metals adheres to the aluminum there will be a perforation of the plate at that point. He swages the plates between sheets of silk tissue-paper, putting a sheet of the paper each side of the plate and renewing the paper frequently, so as not to punch holes through it. In vulcanizing, the plaster must not be allowed to come in contact with the aluminum. This can be avoided by coating the plate with sandarac varnish before it is invested, and when it is invested the plaster covers all the surface except that portion covered with wax, so that when separated no portion of the plate shows except that which has been covered with wax.

For retaining the rubber mountings he washes the surface clean, first with soap and water and then with alcohol. Afterward he scratches it all over with sand-paper, taking care not to touch the surface with his fingers, nor even to permit his breath to touch it. Then with a sharp point he scores it all over lengthwise and crosswise, and it is ready for the rubber.

TO OBTAIN A GOOD IMPRESSION.

DR. G. W. MELOTTE says: Have the wax in the impression-cup warm, then coat it over with a thin layer of plaster mixed to run freely. Press the impression tray up posteriorly, thus bringing the flow of the plaster forward. In this way the soft parts on either side of the median line in the posterior part of the mouth will be forced up and held in that position during the setting of the plaster. A good wax impression is said to be better than a plaster one, because the wax forces the soft parts up and obviates the necessity of trimming the cast. The soft grade of modeling compound would answer even better than wax.

TO PREVENT DARK JOINTS.

Before flasking we fill the cement over the joints mixed thin, letting it come over the teeth as well, and over this we lay a piece of moderately thick tin foil in a strip about a quarter of an inch wide, and when the case is flased we put the cement on the inside, commencing at the joint near the pins and bringing it upward, until it unites with that which was placed on the outside before flasking. This is likewise covered with a strip of tin foil, so as to use every effort to exclude the vulcanite from the joints.

—DR. T. F. CHUPEIN in *Dent. Off. & Lab.*

AN OBJECTION TO ALUMINUM PLATES.

DR. STRAIGHT says the lack of elasticity in aluminum plates is a serious fault, especially where the occlusion is flaring. In such a mouth the strain of mastication will force the plate out, and as it has no elasticity it will not spring back like a plate of any other metal would. He made several plates, some of which stretched in three days' wear so that the fit was spoiled. Of course by using heavier plates more strength and stiffness may be secured; but except in the best mouths they will fail shortly, because of the absence of elasticity.

TO PREVENT WARPAGE OF PLATES.

DR. C. T. HOWARD says that he had made a segment of a circle of pure plaster and vulcanized a piece of rubber in it. When vulcanized, the rubber was not the same shape as the model. He then made a like model of plaster and marble-dust, and the rubber when vulcanized exactly corresponded. Plaster in heating and cooling expands differently from rubber, while plaster and marble-dust expand and contract the same as the rubber does.

MISFITS FROM EXPANSION OF PLASTER.

DR. F. A. GREENE says that the expansion of plaster models is responsible for many misfits in dental plates. His practice to avoid it is the mixing of marble-dust with the plaster. The roughness of the model caused by the marble-dust may be overcome by first pouring into the impression a little plaster for a surface, and then filling up with that which contains an admixture of marble-dust.

Editor's Specials.

"Write the Vision and make it plain."

THE OHIO JOURNAL.

A CHEAP practical joke prevailed in our neighborhood, and was often played on us in our early boyhood. When one would start abruptly away, his comrades would remain quiet till he was almost beyond hailing distance, and then call his name vigorously. When the call was recognized, he would be told to "stop and see how far you have gone." Well, the JOURNAL started rather abruptly; and, had we not stopped to estimate, we could scarcely have realized that we are now writing for the tenth volume. But "*tempus fugit*" "or words to that effect," and here we are,—that is, we and the JOURNAL, more especially the JOURNAL; for it is plain that, do as it will, the profession cannot have us much longer, while, by acting as it may and ought, it can have the JOURNAL for generations to come.

The health of the senior editor was regarded as a dubious quantity among the JOURNAL's assets, and few expected continued editorial labor. But such as it has been and is, can be more accurately estimated by the readers than by the writer. We thought there was room for one more periodical in the profession, provided it adapted itself, in size and shape, to the space unoccupied. We tried to make such adaptation, and succeeded to the extent that ours was not much like any other dental journal. For example, we thought that the proportion of original matter in most of them was too low, and our first number had only about three pages of compilations. One editor of great experience said that was an unfortunate mistake, as it would not be practicable to keep up such proportion; but the remainder of volume 1 was all original matter. After making a predominance of original matter fashionable, the JOURNAL found that it could sometimes be more instructive, as well as more spicy, by mixing in a variable proportion of select matter; and we regard our department of "What We See and Hear" as surpassing anything of its kind in dental journalism.

The instituting of a new department of "Prosthetic Dentistry," including crown and bridge-work, has been very highly commended by all who know of it, and as to the value of this column we leave our readers to judge.

In our "Contributions" department we furnish the sweet cream of mature professional thought. Of course we do not claim that every article is scientifically sound, or that we approve of every sentiment therein contained. Some of the most profitable articles contain more or less of error, for ordinary error may be safely tolerated when truth is left free to combat it. And freedom of discussion has been characteristic of the JOURNAL. And an article that suggests controversial thoughts arouses from an unprofitable lethargy. In almost all departments of active life, agitation is preferable to stagnation.

But a full review of the JOURNAL would call for too much time and space. But we call cordially on our friends of the olden time, and the early and later friends of the JOURNAL to give us their spare thoughts for the benefit of themselves and the profession in general. We are again able to write some, and if you will help us, we shall rejoice in the joy of usefulness. If not ready with a long contribution send a short one. If you have not an essay, send a paragraph. Thus doing you will bless and be blessed.

OBITUARY.

"Thou hast all seasons for thine own, O Death!"

AND this time the call came to our near neighbor DR. W. A. PEASE, of Dayton, Ohio, who, as we are informed, died about 8 o'clock in the morning of November 29th, 1889.

Dr. William Augustus Pease was born at Norfolk, Connecticut, in 1818, and was therefore about 71 years old. He practiced medicine, perhaps in New York, from 1841 till 1849, after which he came to Dayton, and practiced dentistry the rest of his life. He came to Dayton by stage coach, not as comfortable nor as speedy as the Pullman palaces, but the best obtainable at that early day. He immediately opened a dental office, and promptly gained a good and profitable practice, and gained, as well, the respect and goodwill of the citizens in general.

For many years his practice was profitable, and he acquired

a reasonable competency; but by the failure of others, and by the fluctuations of real estate, he lost heavily; and as health and strength were failing, he was not able to regain his former financial independence.

He proved very useful to the dental profession by bringing into it a fund of medical knowledge that did much to lead professional thought into correct paths. Whatever may be the conditions now, it is evident that then, the most profitable pathway into dentistry led through the fields of medicine; and Dr. P. was a personal demonstration of this fact. It was hard to lead a society into pathological error if Dr. Pease was present. He reached conclusions deliberately, and held to them tenaciously. He was cordial in debate, and never afraid to stand by his opinions.

Dr. Pease has left a widow, two sons and a daughter. His younger son, Wm. A. Pease, Jr., has studied dentistry, and will probably succeed his father in practice.

Dr. P. had not been in usual health for a few weeks, and a week before his death the disease culminated in pneumonia; and he sunk rapidly, remaining conscious to the last. The departure of Dr. P. adds much to our loneliness. The JOURNAL's sympathy, in all its fulness is extended to the family.

SURPRISED AND SADDENED!!

IN the *Daily Commonwealth*, of Covington, Ky., for Friday, November 29th, we find the following:

"Dr. and Mrs. Cassidy have suffered a sad affliction in the death of their baby boys. Francis died Tuesday night and this morning his twin brother, Camillus followed. Croup was the cause of their death. The funeral of both will take place to-morrow morning."

Well, we suppose even Heaven would seem lonesome without babies. But does it not seem hard, in the face of such bereavement, to be able to say, "Even so, Father"—"Thy will be done." But here we know only in part. Our side of the cloud may seem to be the blackness of darkness, while on yonder side is the brightness of heavenly grandeur. Human sympathy seems empty hallowness, in a case like this, but as it is the best we have, let it be freely bestowed. The bereaved parents are commended to THE COMFORTER.

POST GRADUATE SCHOOL OF PROSTHETIC DENTISTRY.

WE are pleased to hear of the completeness and success of the Post Graduate School of Prosthetic Dentistry at Chicago, Ill., under the management of Dr. L. P. Haskell, who is so universally known as a leader in this branch of dentistry.

The object of this school is not alone for the instruction of young graduates, but for any and all practitioners who want practical experience in all branches or any special branch of prosthetic dentistry, including crown and bridge-work. The laboratory is furnished with all modern appliances necessary for thorough instruction in this work. Prosthetic dentistry so neglected in the past few years is now receiving renewed attention from the profession and being brought up to the plane it deserves. That such an institution, as this school exists to further the good cause ought to receive the endorsement of the whole profession and a liberal patronage from those who are not proficient in this important branch of dentistry.

B.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

RUBBER-DAM should be thoroughly washed in soap and water, perfumed, and kept in an air-tight case. Place a very small, fine napkin between the lips and the dam.—B. H. CATCHING in *Int. Jour.*

FILLING THE FANGS OF TEETH.—For this purpose there is nothing better than *pure whalebone*; if properly trimmed, it can be forced into the canal, where anything will go—use it with chloro-percha.—DR. PENNEY.

CLEANSING AND POLISHING TEETH.—To remove the tartar, I use thin, springy, curved-chisels, resting my fingers on the teeth, using the mallet, with hand, or the assistant (the assistant is best),

with quick, sharp blows; very little, if any, wounding of the gums is caused. In polishing, I use peroxide of hydrogen, in conjunction with powders, etc., and use the engine.—DR. A.D. PENNEY.

GUTTA-PERCHA INSTRUMENT.—DR. ASHLEY FAUGHT has devised a little instrument that will shortly be put on the market, to be used for filling teeth with gutta-percha. It consists of a handle, to which points adapted to filling any cavity can be attached. These points can be heated to any desired temperature by means of electricity passed through the handle to a resistance material situated at the base of the point.

ORIGIN OF PYORRHOEA.—DR. G. S. ALLAN states that if the tartar deposit could be eliminated from the list of causes of the disease in question, the disease itself would practically disappear, so manifestly is it the prime cause of the disease and so little have other causes to do with it. Nine-tenths, if not ninety-nine-hundredths, of the cases that present themselves are due to it. Still there are other ones to be considered.

THE USE OF THE DRILL IN CLEANING ROOT-CANALS.—DR. RETTER says: When absolutely dry, I prefer to drill out a root-canal whenever practicable; in fact, any root that can be safely drilled. There is, perhaps, no better way of removing septic contents beyond any doubt. Drilling a root-canal is rendered much easier after it has been cleaned and dried. However, labial roots of molars and anterior roots of lower molars cannot always be readily drilled out.

ROOT FILLING.—After thoroughly washing the root out with warm water, and drying it carefully, I force a ten per cent. solution of chloride of zinc through the foramen, and the patient lets me know when it is through. This being accomplished, the root is again thoroughly dried, and then filled with the following mixture: gutta-percha dissolved in chloroform, to about the consistency of cream, and forty to fifty grains of powdered iodoform is added to each ounce of gutta-percha solution. This should be stirred each time before using, as the iodoform is only slightly soluble in chloroform. To get this mixture into the root is not the easiest matter in the world, as all know who have tried a solution of gutta-percha; but it can be done. If you are in a

hurry and do not take sufficient time to do this well, then it is a waste of time to do it at all.—DR. F. M. SMITH.

PULP CAPPING.—I have capped pulps with almost every material from a goose-quill to a buck-shot, including the chlora-percha, oxychlorides and phosphates, bone, sponge, and asbestos; and the percentage of success has been greater with lead and asbestos than with any other material. The tissues of the body seem to tolerate lead to a remarkable degree; and while it is almost universally used as a missile of death, yet, sometimes, it is a conservator of life. The asbestos-felt is slightly moistened with a mixture of carbolic acid and oil of cloves and carefully placed over the floor of the cavity, and the cavity then carefully filled with cement, which should remain a few months before the permanent filling is inserted. I think one reason for the larger percentage of success with the asbestos is its non-conductivity; being a non-conductor, the pulp is protected from the influences of thermal changes, a considerable factor, in my opinion, in the destruction of pulps.—DR. STOCKTON.

CEDAR-WOOD CANAL-POINTS.—Referring to the report in the *Dental Cosmos* for October of the last meeting of the American Dental Association, I wish to call attention to a material for root-filling that seems to me far superior to anything mentioned by those who took part in the discussion of that subject. The material is red cedar *properly and thoroughly prepared*.

Having split red cedar into small pieces the size of an ordinary match or even smaller, place them in paraffine, heated almost to the boiling-point. Allow them to fry in this material till all the moisture is expelled and the wax thoroughly permeates the wood. Allow the paraffine to cool, then again raise the temperature sufficiently high to scorch the wood a *very little*. Cool again, then re-heat. The heating and cooling allows the paraffine to thoroughly fill the pores of the wood. My reasons for preferring this material are that the red cedar is almost indestructable, and though a very dense wood it is also very soft, and when driven into the tooth will adapt itself to the form of the canal. The paraffine renders it impervious to moisture and makes it easy of removal if desired. As a disinfectant and antiseptic I apply chloride of zinc to the walls of the canal previous to insertion of the paraffined cedar.—JAMES H. BEEBE in *Cosmos*.

TREATMENT OF PYORRHOEA.—I use the ordinary commercial sulphuric acid, but stronger; a twenty-five-per-cent. solution, and sometimes even stronger than that; but I do not allow it to remain on long. I apply it with a sharp stick around the teeth. It, of course, turns the parts of a dark color. I allow it to remain two or three minutes; not more; just sufficient to burn out the dead tissue; then immediately apply bicarbonate of soda, which brings away every portion of the dead matter. After a little time has elapsed I wash it out with warm water; then apply sulphate of quinia. I have used this for years successfully. The sulphate of quinia will remain there longer than any other antiseptic that I know of. If the pain returns in the course of a few days, I would, of course, repeat the sulphuric acid treatment, and after that continue the antiseptic treatment. Then, after the parts have become perfectly healthy, you must use an antiseptic wash to keep them in proper condition. If the pocket remains, there will be a return of the disease, in spite of all your efforts, if you do not take necessary precautions to obliterate it.

This mode of treatment is not original with me, except the bicarbonate of soda and quinia. I have used these for several years with the most decided success and the greatest satisfaction. —DR. JAS. TRUMAN in *N. J. Society*.

GOLD TIPS.—In making tips for abraded teeth, to lengthen them, or to avoid pulp-exposure by abrasion, the method I have used for years is to take pure rolled gold, about 480 foil; cut a piece a little larger than the face of the tooth to be tipped; place it on the tooth with a piece of erasing rubber over it; let the patient bite hard on the rubber; anneal the gold and repeat the bite. In very uneven surfaces I sometimes have to use a small piece of elastic rubber underneath the erasing rubber. This gives a perfect swage. Cut a piece of solder (20-k.) the size of the swaged gold; lay it on a strip of the gold you use for your tip; lay the swaged gold on the solder and fuse the solder. If proper care has been used, you will have a perfect fitting tip. Drill two or three holes through the tip in positions to pass between the pulp and periphery of the tooth on a line with the axis; in these holes put platinum pins and solder. Trim as near as may be to the form you wish it when finished. Cement to the tooth, burnishing the edges well, then grinding and polishing to the finish. Any thickness can be built up that is desired.

With proper care you will have a substantial tip that will last many years. I put one on in 1871 that the patient wore until he died this summer. Many others since have proved equally satisfactory. Years ago I used thin platinum instead of gold, but I discarded it on account of the color.—W. H. JACKSON in *Cosmos*.

ROOT DRESSINGS.—DR. RETTER uses cotton steeped or soaked in a strong solution of hydronaphthol in absolute alcohol, and says: I have used iodoform and many other remedies, but have adopted this for the simple reason that I have as good, if not better, results with it than with any other drug. It is almost odorless, and being perfectly soluble in alcohol will, when placed in the tooth, penetrate into the tubuli on account of the affinity of the alcohol for water, thus abstracting the water from the contents of the tubuli and thereby robbing germ-life of one element of its existence, which is moisture. Hydronaphthol in my practice has filled the place of a germicide most successfully. I do not like the use of essential oils. Oil and water will not mix, and I prefer to avoid anything that has a tendency to clog the dentinal tubes. Perchloride of mercury in combination with tartaric acid, so as to prevent the formation of albuminates, is also a favorite dressing. I do not like to use it in the anterior teeth, for fear of subsequent discoloration. However, where this is not to be feared it is beyond doubt the most powerful germicide that can be applied. It also has a strong affinity for water,—a valuable quality for a canal-dressing. Iodol dissolved in alcohol is another good dressing, and, indeed, the antiseptics for this purpose are multiplying rapidly. It must be observed, above all, that it is not *alone* the drug that is employed which brings the effect, but the manner in which it is applied. Thoroughness is essential.

MANIPULATION OF COPPER AMALGAM.—Great care should be used in heating. Better results are secured when it is exposed to a slow heat. It should never be heated until it turns blue or brown. When sufficiently softened, place in a mortar that has been previously heated to about 110°, crush and triturate thoroughly, after which manipulate it with the fingers lightly and rapidly in the palm of the hand; then place the material in the warm mortar and use warm instruments for packing, having first used warm air for drying the cavity, if practicable. When full,

smooth off with wet bibulous paper and leave the polishing for a subsequent sitting. I sometimes cap the copper with gold, and know of no objection to the practice. Of late I have been adding gold to the filling while soft by rubbing No. 4 cohesive gold foil into it with a hot burnisher, being careful not to have more than one thickness of foil under the burnisher at one time. Such fillings retain their color, but do not receive as fine a finish or have as much edge-strength as the copper alone. When using copper amalgam I do not use varnish on the interior of cavities, as I believe the chief virtue of copper amalgam is in the formation of an oxide or a sulphide, either of which is an excellent and durable antiseptic. For this reason the pulp will tolerate its near presence better than that of any other alloy; it is also less susceptible to thermal changes.—DR. G. V. AMES.

ROOT CANAL FILLING.—DR. GARRETT NEWKIRK says: In using Mrs. Northrop's cones or other fine "points," for filling root canals it is nearly always advisable to clip the small end, not squarely but diagonally, with the scissors. The large end should also be clipped, as a rule, so that the whole shall not be much longer than the root to be filled. The instrument to carry the cone should be blunt and smooth, and slightly smaller than the opening of the canal. It should be drawn tempered to admit of being bent to any desired angle. For filling anterior roots of molars, upper or lower, it should be bent about an inch from the end, to correspond in direction with the canal. It should be warmed just enough to take up and carry the cone, but not so much that it may not be readily detached by a little turning. With a glass held so as to reflect clearly the pulp chamber, a steady hand may carry the point directly and accurately to the canal opening.

To facilitate access, the external opening should be free and wide. Whatever overhanging walls or weak cusps there may be, that will sooner or later have to be sacrificed to insure a permanent filling, may as well be removed at the beginning, once for all.

I have been surprised to see teeth in which good operators have attempted to treat and fill pulp canals through a small external opening, when the simple excavation of decay and chiseling of their walls would have given them abundant room.

Don't!! Don't attempt to operate through a tube when you may as well have a funnel.

Again, as a rule the cone should of itself so nearly fill the canal wherever a cone may be used at all, that very little of the dissolved gutta-percha is needed. There are canals too fine for any cone, and occasionally one too small and crooked for any broach to pass its entire length. After a day's saturation of the general pulp chamber with oil of cassia I have not had trouble result from these in any case, I think.—*Dental Review*.

TRANSMISSION OF SYPHILIS.—The Editor of the *Dental Review* concludes an editorial on the "Transmission of Syphilis," as follows: The question of using the utmost care in cleansing instruments, and immersing them in antiseptic solutions forces itself upon us in all cases, whether it be suspected by the operator that his patient is a syphilitic or not. Dentists, are daily using forceps, scalers, excavators, probes, lancets, burs, drills, elevators, clamps, and last but not least the rubber-dam in the mouths of patients. If these be not cleansed and disinfected, what certainty is there that an innocent person will not be inoculated with this dreaded constitutional disease? We have earnestly advocated, for years past, the sterilization of instruments, *all instruments* used in contact with the skin or mucous membrane, or in the roots of teeth, or the so-called pyorrhœa pockets. Any dentist can be provided with the means of disinfection so easily that there will be no cause for fear of future trouble.

R	Resorcin	-	-	-	gr. x
	Water	-	-	-	minims xc

or,

R	Bichloride of mercury	-	-	-	gr. iiij
	Hydrogen di-oxide	-	-	-	℥ v
	Water	-	-	-	℥ vi

or,

R	Beta-Naphthol	-	-	-	gr. xl
	Water	-	-	-	℥ xv

or if carbolic acid is desired as an ingredient of a disinfecting solution:

R	Carbolic acid	-	-	-	gr. lvvii
	Resorcin	-	-	-	gr. xxxiii
	Water	-	-	-	℥ xii

This may be further diluted three times with water, and it will still be effective. *Be sure to cleanse and disinfect your instruments to-day.*

FILLING OF TEETH WITH PIECES OF ENAMEL DERIVED FROM NATURAL TEETH.—DR. R. HEIDÉ, D.E.D.P., from Paris says that for several years past attempts have been made to find substances which would at the same time approach the color of the tooth and preserve it from caries; a substance which would not contract, nor wear, nor be attacked by the acid fluids of the mouth.

For the past four years the author has used fragments of natural enamel for the filling of cavities in anterior teeth; the results obtained have been very encouraging, the filling being much superior to any cement filling. The enamel pieces are, of course, to be prepared and adjusted in advance; to make them hold better in the cavity when fixed with cement, little side-faces are filed on each side.

The *modus operandi* is as follows:

1. Supposing one has to deal with a comparatively large caries in the median surface of a lateral incisor, the cavity is prepared as if a cement filling was to be made, with a good cervical groove and one at the cutting-edge of the tooth. On another natural tooth a corresponding part is cut, so as to have the exact form; the labial border of the piece of enamel is filed straight, while the lingual border is beveled and is thus more easily retained.

2. On the labial surface of central incisors we find three sorts of cavities, round, oval, and square. As the form of the cavity ought always to be respected, the enamel piece is prepared to suit it. The round form we find more often on the eroded teeth; the square form is also found on the same teeth: as to the oval form, it is more often found at the cervical border or neck of the tooth.

3. Bicuspid, first and second, are often affected by caries on their median surface, with extension to the masticating surface; in such cavities gold fillings are very apparent and are to be avoided if possible. In these cases the piece of enamel is given the shape of a shirt-stud, which causes it to be held very firmly. The cement is first introduced and the piece is carried into place with an instrument having a little wax at the end of it; the surface is then rounded even and polished as usual.—*From Cosmos Report Int. Congress.*

Societies.

"Wherewith one may edify another."

SECOND DISTRICT DENTAL SOCIETY.

ORGANIZATION of the second district dental society of the State of Ohio, was effected at Toledo, Ohio, on Nov. 29th, 1889, with the enrollment of 17 members. This is a good start and there is every prospect of the society greatly increasing in numbers and becoming at least one of the best in the State. Meetings will be held on the second Friday of each month at such time and place as shall be determined by the executive committee. The next regular meeting will be held at the dental depot of Ransom & Randolph, Toledo, O., on Friday, January 10th, 1890, at 7:30 P. M. The following papers will be presented:

Tin as a Filling Material, by Dr. S. H. Harlan, Toledo.

Tin and Gold in Combination as a Filling Material, by Dr. F. O. Brake, Toledo.

All dentists are cordially invited to attend these meetings and participate in the proceedings. As soon as proper arrangements can be made the meetings will be held afternoon and evening and suitable clinics and exhibits be given.

OHIO VALLEY DENTAL SOCIETY.

THE ninth quarterly and second annual meeting of the Ohio Valley Dental Society, will be held at the office of Dr. H. H. Harrison, 1139½ Main Street, Wheeling, W. Va., on Monday, January 6, 1890, at 7 P. M.

F. S. MAXWELL, *Sec'y.*

The following is the programme:

Essay.—"What shall be done with the Third Molar?" by Dr. J. G. Parr.

Essay.—"Education," by Dr. F. E. Battershell.

Essay.—"Care of the Deciduous Teeth," by Dr. F. S. Maxwell.

Essay.—"The Straight Road," by Dr. H. H. Harrison.

Incidents of Office Practice.

The members are particularly invited to bring some mechanical appliance to show in clinic.

ODONTOLOGICAL SOCIETY OF CHICAGO.

At the annual meeting of the Odontological Society of Chicago, held Nov. 19th, the following officers were elected for the ensuing year: President, Dr. P. J. Kester; Vice-President, Dr. Frank H. Gardiner; Secretary and Treasurer, Dr. E. Noyes; Curator, Dr. Garrett Newkirk; Member of Board of Censors, Dr. Geo. H. Cushing.

E. NOYES, *Sec'y.*

Books and Pamphlets.

PEARSON'S APPOINTMENT BOOK.—This little vest-pocket appointment book is so universally known that it hardly needs a description from us. It contains all the essentials of a complete appointment book, is convenient in size, and always at hand for reference. It is neatly bound in red Russia leather with pencil attached, and costs only 50 cents, or 75 cents with your name printed in gold on the cover. Published by R. I. Pearson & Co., Kansas City, Mo.

TRANSACTIONS OF THE ODONTOLOGICAL SOCIETY OF PENNSYLVANIA, 1886, 1887, 1888.—This book, of 325 pages, is filled with valuable thoughts of some of our best minds. The papers are nearly all practical, which shows that the object of the society is more for the advancement of that knowledge requisite for every day work than the theories and suppositions of some of the so called scientific researches that aid us comparatively little in making our livelihood. A society of this kind is of incalculable benefit to practitioners, and if we but had many more of them our profession, as a whole, would be elevated to a higher plane.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION, 1889—Philadelphia. S. S. White Dental Mfg Co.—Following the style of previous years, the book appears neatly bound in cloth. The full transactions of each session are given, and together make a work of 159 pages. Valuable thoughts can always be found in these volumes, and taken together they make quite a complete library in themselves. The book, as usual, is neatly printed, illustrated and typographically excellent.

BOOKS RECEIVED.

CROWN AND BRIDGE-WORK, by DR. GEO. EVANS. 2nd edition enlarged. Philadelphia: S. S. White Dental Mfg. Co. Price, cloth, \$3.00.

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

IDEAS SUGGESTED BY A CRITICISM OF THE
DAKOTA DENTAL LAW.

BY CHAS. B. ATKINSON, D.D.S., NEW YORK.

DENTAL laws are too often formulated to selfishly exclude working territory instead of truly to elevate the standard of *quality* of effort offered to the public.

The several laws do not agree in their requirements, nor can they approach agreement until a uniform standard for all States is secured. A first step to this end would be for each State society to elect one or more members to a congress before whom all laws and kindred matters would be brought, weighed and adjusted to cover one system of requirement for admission to practice. Then to elect a board of examiners to work under its equalized plan. This board to meet in each State once a year, to examine applicants and issue certificates of qualification, which certificates would be accepted at any time in any State by the local officer charged with their registration.

The congress might elect one, two, three or more boards and the several States could be divided into proper sections to equalize their labors.

Uniformity throughout the country, in the standard set for applicants, is the great point to be desired, and to make this high, sufficient and efficient separate State representation in a national board or congress is best fitted to secure.

Annual examinations have been proposed.

The dentist is essentially a practical man, whereas physicians deal more with theories and lawyers with memorized forms, yet *these* do not consider annual examinations necessary.

The *work* of the dentist must be faithfully executed to maintain his position. His *practice* improves him.

Making the certificates renewable annually and giving the board power to withdraw any certificate on proper evidence of wrong doing, with provision for a new *examination* for the issuance of a new certificate would cover the needs in this direction and be reasonable and acceptable.

One of the fundamental principles of law is to consider an individual innocent until *proved* guilty, therefore a diploma from a regularly recognized institution should be registered, and it is against the policy of law and in fact unjust to presuppose the holder not entitled to it and require a further examination. This need not exclude proper *identification* of the individual. Provision could properly be made for the suspension of a diploma on proved sufficient misconduct. The board could suspend recognition of any college permitting irregular practices until the falsity of the charge had been satisfactorily established or an acceptable reform instituted.

Colleges grant diplomas on payment of certain fees and the meeting of certain requirements. They are chartered institutions by State law and are paid the prescribed fees, not only for the tuition they promise to give the student, but also to legalize him in the practice of his profession.

If he passes his college and cannot pass an examining board something needs adjustment.

This seems to be in part legislation that will provide for the conduct of examinations so that, as far as regulated study goes, the legal status of the professional neophyte will be established once for all.

The national examining boards could properly embrace in their duties the examination of college students and therefrom a uniform standard would result to which the colleges would be required to come, and the variety of grades of capacity now passed as competent would measure more uniformly than they do. An M. D. is neither qualified nor justified by his education to perform dental operations, and the laws err seriously that embrace the degree of M. D. among those accepted as qualified. Those who have fulfilled the courses prescribed for taking the M. D. know full well that the subject of the teeth is merely passed over in a most cursory way.

Dental laws *should* provide for the *examination* of an M. D., and holders of such degrees are properly subject to post-graduate examination if they intend to practice dentistry unless endorsed by a specific *dental* diploma.

The payment of the expenses and *salaries* of the boards should be from a fund contributed by the local societies engaged in the movement. The fees charged applicants to be turned into the treasury towards reducing the assessments or contributions necessary. Some further legislation would be necessary of course, but if the congress proposed were first held and thorough consideration given to the matter, a national bill could be drafted which each State society could have passed and then the machinery of our profession could be expected to produce something creditable.

This congress could be continued (merged with the American Dental Association perhaps, but maintaining its own distinctive local constitution), and a wholesome influence would be exerted by it.

Its meetings would properly be most frequently east of the Mississippi, but the tide of population would control that.

Far western States and far Southern States might properly be allowed extra expenses or mileage proportional to their excessive distance from the place of meeting.

The Atlantic seaboard might be taken as the limit of distance, and the States lying outside of such distance be granted a proper extra compensation.

For other consideration of this subject the reader is referred to Transactions American Dental Association, 1889, p. 106, *et seq.*

CARE OF THE DECIDUOUS TEETH.*

BY F. S. MAXWELL, D.D.S., STEUBENVILLE, O.

A SUBJECT of as grave importance as this, one should take pride in presenting to a dental society for its discussion.

We all know how much good can be obtained by a due consideration of the subject, and for this purpose I write, hoping it may provoke a general awakening of interest in the right direction.

It must be surprising to all that so little has been written concerning the care of the temporary teeth, inasmuch that we all agree, or should agree, as to their importance. We know that it has only been of late years that they have received any consideration relative to their preservation, but why they have escaped the dentist's care so long remains a mystery.

Perhaps the deciduous teeth of the children of to-day are not as free from decay and disease as they formerly were, and I firmly believe it, and for that reason have never received that proper care heretofore that they are now receiving; however, there is a large field for the care of them alone, at the present time, in which field we should all embark to a considerable extent.

To begin with: a prospective mother should be taught her duty in regard to the future welfare of her offspring. She should be taught of what her system is composed, what effect it has upon her unborn child, what that child derives from her, and what she should make provision for by her diet. Lime, phosphorus, potash, silex, etc., of which the teeth are composed, should be taken in suitable quantities, both for the preservation of her own and her child's teeth; and when I say they should be taken in suitable quantities, I mean, by the taking of food containing those important substances, such as meat, milk, eggs, and vegetables, necessary to produce strong flesh and teeth.

What kind of teeth can you expect in a child in which it and its mother exist on starches and sugars alone. A *little* sugar will do no harm, and it must be pure, but a little does not go far toward forming strong enamel, and they would be better without

* Read at the Ohio Valley Dental Society meeting, Wheeling, W. Va., Jan. 6, 1890.

it altogether. We have all noticed in most mother's mouths, after child-birth, that pearlish white line, or groove, at the gum margin, that could have been prevented to a considerable extent by the free use of lime-water during gestation.

They should be taught that the germs of the child's teeth begin to form as early as the fifth or sixth week of foetal life, that the teeth become almost solidified before its birth, and that during lactation the diet should be as equally important a factor in the production of strong and beautiful teeth. What delights a mother more than the appearance of her baby's first tooth, and even the succeeding ones, so that if she has followed our advice, her profit is sufficient pay for the trouble taken. Good food means good blood, and all nutritious food taken up by the blood, being assimilated, shows the desired result in the human economy. Too much stress, therefore, cannot be placed upon this part of the care of the deciduous teeth.

We hear and read of plenty of methods of preventing and arresting decay, filling teeth, etc., but for the most part it is for teeth that have been erupted, and but little new can be said in that direction; a little, however, is a step forward.

The first and utmost thing is to impress the importance of cleanliness. A child, ever so small, can be taught the usefulness of a small, soft tooth-brush. The temporary teeth, to them, are as important as the permanent to an adult. Much pain can be saved with but little effort, by the proper use of the brush, and an occasional rinsing of the mouth with lime-water. When they have grown a little older give them a small quill tooth-pick to use, and you will soon see the habit becoming a permanent one.

The deciduous teeth should be filled as soon as decay makes its appearance. But what should they be filled with? Much depends upon circumstances. A child enters your office with the terrible dread of being hurt—some friend has told her "it would almost kill her"—generally for the first time accompanied by its mother; I would frequently prefer the mother to remain at home. It enters the chair with a feeling of great fear and hesitancy, and, "poor little innocents" look upon the operation, whatever it may be, as a case of life or death. Assure them that you are not near as dreadful a man as you have been pictured, by an explanation of the different instruments brought before them; give them a ride in your pedal-lever chair, a time or two by way

of amusement; it takes time, but time is money. Never use the engine for the first time, they have heard of that. Select a sharp, spoon-shaped excavator—the decay is generally of a spongy or leathery texture and this is the most suitable instrument for removing it, and rose-head bur for smoothing the edges. If the cavity be simple, it will soon be ready for the insertion of an amalgam filling, and the child will feel grateful, and will have satisfied its curiosity.

Do not fill more than one cavity at a sitting, they prefer to come oftener and for a short period. But, suppose this child has been crying for several nights with toothache, an exposed or irritated pulp, and seeks your office for relief! What will you do? Remove the loose decay. Place a small pledget of cotton saturated with oil of cloves, and secure with cotton saturated with gum sandarach. If you have been successful in treatment, in a day or two cap with oil of cloves and oxide of zinc and over that place a thinly mixed phosphate filling because of its being the easiest to insert without producing pressure. On the other side of the mouth you find its companion, the child says it formerly ached, but does not now give any trouble.

You most likely discover an abscess at the end of a root—dead, or devitalized, deciduous teeth are prone to abscess. What will you do with it? Will you fill? Certainly. Cleanse the cavity of carious dentine and foreign matter, for the chances are it is alive with “germs,” exposing the root canals. Wash out with peroxide of hydrogen until no effervescence is noticed or odor perceptible. Place oil of eucalyptus and iodoform in the canal, or canals, and allow it to remain for three or four days without changing. More harm is done by too much treatment than too little, and if the tooth has been comfortable during that time, fill at once with chlora-percha, or gutta-percha, if the canal is large enough, preceded by the chlora-percha, using care not to force it through the naturally large foramen, and cover with whatever desired. In a deciduous tooth, more care should be taken not to force a foreign substance through the foramen, than is necessary in the permanent, for obvious reasons. The eucalyptus oil saturates the root canals and dental tubuli by virtue of its diffusible properties, and enough remains in the canals to force with chlora-percha to the ends of the roots, drying up the fistulous opening and preventing, materially, subsequent trouble.

You notice that I use the essential oils in the treatment of the deciduous teeth. I believe they are the best medicines brought to our notice for that purpose. Suppose capping will not *save*, in your judgment, how will you destroy the pulp? Strangle it with two or three applications of pure carbolic acid. I have used arsenic to destroy, but prefer not to in a majority of cases. Remove the pulp with small barbed broaches and fill as before.

There is no trouble, gentlemen, in succeeding with children if we but approach them properly. Treat them tenderly, be patient, delicate in touch, sympathetic, apparently—gain their esteem by kind words, and your path is made much clearer. There is nothing more satisfactory to the mother, child, or yourself, than the successful care and treatment of the child's teeth. Be thorough in your work, earn their confidence by your sound advice and good judgment, and you will be amply repaid by the good results shown and by their subsequent patronage.

TIN.*

BY DR. S. H. HARLAN, TOLEDO, O.

WHEN one considers how long this metal has been before the profession as an article for stopping carious teeth, there would seem but little probability of offering any new thought or suggestion concerning its peculiar usefulness or characteristic qualities to-day. To the veterans of the profession it is indeed an ancient friend and ally, and though eclipsed for a season, nay, well-nigh supplanted by amalgam, yet, if I read aright the signs of the times, evidence is not wanting of a revival of interest in if not a marked and distinct tendency of returning to a larger, more frequent employment of the old-fashioned and, as I hold, eminently efficacious material, *tin*. Forty years ago when a pupil in the office of an alert and progressive dentist of the period, I was taught to confine my efforts at "saving" carious teeth to filling with one of two metals only. It was gold—soft gold we at present name it, in contradistinction to another form, the so-called cohesive—or it was tin. These and nothing else.

* Read before the Northwestern Ohio Dental Society, at Toledo, January 10, 1890.

None other was tolerated. Amalgam was ignored or prohibited. The plastics, gutta-percha, oxychlorides and oxyphosphates of zinc, at that date had not, as filling materials, been introduced to the profession. How or in what form did we use tin? Invariably in the shape of folded ribbons of light-weight foil. A sheet of this was divided into two, three or four equal parts and folded or doubled, superimposing one lamina upon another till reduced, as the case might demand, to one or two lines in width. Then with a curve-pointed plugger it was tucked into the cavity, from right to left, from left to right, fore-and-aft till quite full, usually concluding this particular part of the operation by thrusting a stout, conical-pointed tool, if the cavity was fairly accessible, through the centre of the mass and into the space thus forcibly gained inserting a final block of foil as a wedge or key to the whole filling. Add to this condensing with broad-faced pluggers, scouring or polishing with pumice, then a final burnishing and the case was considered complete. Briefly stated such was our mode of procedure when filling with tin thirty-five to forty years ago.

That it was primitive and crude none need be reminded; or that manipulated as indicated the resulting plug would prove inadequate to the restoration and maintenance of lost contours may be set down as palpable or self-evident. That in a majority of instances such fillings were a long remove from density, at all events from solidity, once for all let it be confessed and affirmed. Despite the fact, however, that manifestly they not infrequently *leaked*, yet no inconsiderable percentage of these leaky fillings when removed and subjected to scrutiny revealed another fact, namely, the subjacent dentine might be discolored, it usually was, but little or no resumption of decay was present, it might even be showing symptoms of eburnation.

Here the question may be raised, nor indeed would it be inapposite to the matter in hand, how or why it happened we had so much experience in removing those tin plugs? The answer is not far to find. As made at the period under consideration (and just here was the prime defect of such stopping), the tin plug when exposed to the direct action of mastication was not slow to abrade, to diminish by attrition. Hence it transpired, not rarely within a space of three, sometimes in two years or less, that so much of the metal had frittered away its removal and a

subsequent re-filling became imperative. Happily the "prime defect," alluded to above, cannot be lodged as an objection to its employment under later methods, of which I shall have something to say farther on.

Other lessons ran parallel with these going to show therapeutic properties of tin as an obtundent of hypersensitive dentine. But for the risk of being prolix I should relate how this fact first presented itself in my own practice. Suffice it to say, it *did* present itself early in my career and became a not unprofitable acquisition to my stock of professional knowledge. In cases where from excessive sensitiveness the patient was on the eve of incontinently terminating the sitting, I have stuffed the partially prepared cavity with tin, dismissed it for a time to find when next we met at the chair the hypersensitiveness greatly abated if not wholly absent.

Toward retarding the undue wasting of the filling from mechanical abrasion, to which reference has been made, my first efforts were in the nature and shape of cylinders of heavier foil, cylinders rolled with much firmness and compactness. Something was gained by this treatment, but not nearly enough. On occluding surfaces of molars and bicuspid especially the tin plug still persisted in its mischievous habit of diminishing quite too rapidly for permanent work. The evil was only modified, not cured. Eventually the want was met, the difficulty overcome by simply using heavy foil (No. 20 or still heavier), cut to narrow strips, *not* folded or doubled, and made strongly adherent to foundation pellets or other underlying portions of the metal by *interdigitating* with sharp and boldly serrated pluggers. Armed with these and a mallet it was quickly found and demonstrated how readily and securely dense resistant contours could be laid on, which in the ordeal of mastication, would wear passing well and yield results in other directions equally gratifying.

And so it comes about that I am a believer in tin. While its successful manipulation at the hand of the operator requires greater care and a higher order of skill than amalgam, yet as a tooth-saver it will be found more trustworthy. Pliant and tractable under the instrument it adapts itself easily and accurately to surface and margin; packed as a filling it never perceptibly shrinks or expands; discolours as little or less than amalgam, behaves kindly in contact with fretful dentine and in some way,

not clear to the writer, exerts a restraining influence against recurrence of decay in critically conditioned cavities—an influence and control not exhibited by gold and not by amalgam. Especially true is this last, of lateral cavities in molar and bicuspid teeth where the decay extends to the gum margin. So potent do I consider its efficacy at this particular point that when about to fill with gold I rarely neglect to commence by first laying along the cervical border a pellet of No. 4 tin foil, following up and finishing with the more precious metal. This done I have a sense of security against a re-appearance of decay at the special danger point, a sense of protection and safety which the application and presence of no other metal furnishes or affords.

This paper may be open to the criticism of being more retrospective than didactic. As the topic comes to me it is inevitable that it should be, for whatever estimate I may place on tin, or whatever value it may have to me as an article for filling and preserving teeth, is but the direct and legitimate outcome of forty years experience in its employment and observing the results.

TIN AND GOLD IN COMBINATION AS A FILLING MATERIAL.*

BY F. O. BRAKE, D.D.S., TOLEDO, O.

WHOEVER may have used these metals in combination first, to Dr. Miller, of Berlin, belongs the credit of having brought the use of them prominently before the dental profession.

It is claimed for this combination that it presents more requisites as the ideal filling material than any other, being easily adapted to the walls of the cavity, withstands the wear of mastication becoming quite hard in a short time after insertion. It is unchanged by the fluids of the mouth or chemical influences; non-irritating; a poor conductor of thermal changes; it can be used where it is impossible to prevent moisture; will not discolor dentine; is easily inserted; its color is an improvement on the amalgams, remaining in most mouths a light grey.

The places where it is particularly indicated, are teeth with little resisting power, enamel white and chalky: teeth with very

* Read before the Northwestern Ohio Dental Society, at Toledo, January 10, 1890.

sensitive dentine; in all proximal cavities posterior to the cuspids, and for buccal cavities in molars. For children's teeth and young and nervous patients, and where it is impossible to prevent the inroads of moisture.

The preparation of the cavity is the same as for soft or non-cohesive gold. In proximal cavities, in molars and bicuspid open up the cavity from the coronal surface, leaving the lateral walls as strong as possible, avoiding angles, but letting the margins present easy and graceful curves. The retention of the filling can be made by cutting shallow grooves in the lateral walls if they be strong, or in the coronal plate, or open up into the anterior or posterior sulci, as the case may be, exercising great care lest the tooth may be weakened by unwanton destruction of tissue. Preparing the cervical base with suitable chisels, reversing the strokes as the operation proceeds.

To prepare the material for use take a sheet of No. 4 soft gold, lay it on a sheet of No. 4 extra tough tin foil, cut into strips, large or small according to the size of the cavity. Take the strip between the fingers and twist into a rope, close or loosely according to your fancy; the strips of tin and gold will represent a spiral spring; or it can be rolled in a napkin, makes no difference which of the metals is outside, use same as soft gold, keeping the edges covered with an excess letting the filling proceed from the sides of the cavity. After filling two-thirds of the cavity the operation may be completed with cohesive gold.

There is some electrical action between the two metals which I consider a benefit as it stimulates the dentine to throw down calcific matter for its own protection. Certainly there is no need to fear starting a "dinamo" in the mouth which would result in harm. After the filling has been in for a short time the dentine will be found quite hard, and of course less susceptible to the action of deleterious agents.

SOME POINTS IN THE ETIOLOGY, DIAGNOSIS AND
TREATMENT OF EMPYEMA OF THE ANTRUM.

BY FELIX SEMON, M.D., F.R.C.P.

(Continued from page 15.)

OF the objective symptoms under such circumstances, by far the most important, is the actual observation of the discharge of pus from the opening of the antrum. Sometimes it is possible, with good illumination and after introduction of a nasal speculum, to see without further preparation pus in the middle meatus, *i.e.*, between the middle and lower turbinated bones, or between the middle turbinated bone and the external wall of the nose, running downwards in a small, thick or thin, yellow or whitish stream, whilst the rest of the nostril, especially the *upper* portions, appears perfectly healthy. In other cases in which the mucous membrane of the nose is much swollen, previous cocaine-ization may be necessary, or the swollen mucous membrane of the middle turbinated bone may have to be pressed aside with a blunt probe before pus will make its appearance. Schoeller and Walb have drawn attention to the fact that in such cases sometimes a pulsating light reflex is seen on those parts of the nasal mucous membrane on which first the fluid will appear, analogous to the pulsating light cone on the tympanum in cases of otitis media.

However, even if pus should be seen in the region corresponding to the ostium maxillare of the antrum, the objection might still obtain that it had by accident found its way just to this part, and that it may actually come from one of the other accessory cavities of the nose. The most important feature, therefore, in establishing a certain diagnosis will consist in actually demonstrating, in all cases, the direct passage of the matter from the antrum—a procedure which is simply indispensable, when the patient has carefully cleaned his nostrils just before consulting the practitioner, or when all the secretion having been evacuated in the morning, not so much accumulation has yet taken place at the hour of the consultation that the secretion could be spontaneously discharged into the nose.

The method of investigation is very simple. The nose having been thoroughly cleansed, and it having been ascertained by inspection that the nostril corresponding to the suspected antrum is quite free from secretion, the patient is told to lie down across a chair or on a sofa, supporting himself with both hands on the floor, head downwards, *but not too low*, and the *affected* side *uppermost*. After remaining for about ten to fifteen seconds in that position he is at once to resume his position in the chair without either blowing or inspiring through his nose. The speculum having been re-introduced pus will be seen in the middle meatus in greater or smaller quantity, if the discharge really comes from the antrum. This simple and useful procedure has been introduced by Bayer and B. Frankel. I would especially recommend (1) that the head be not held *too low*; (2) that the patient does not remain *too long* in the inverted position, because the purulent secretion, if thin and abundant, is apt to gravitate under such circumstances into the *upper* parts of the nostril, when it may be impossible to ascertain from *which* of the accessory cavities it actually comes.

It goes without saying that all the signs and means of diagnosis so far mentioned, which are referable to the discharge of the secretion into the nose, will be only available when such a discharge can take place, *i. e.*, when the ostium maxillare of the antrum is unobstructed. Obstruction of this opening greatly modifies both symptoms and means of diagnosis. Such an obstruction may be caused by very thick, creamy consistence of the pus, especially if the opening be naturally narrow, by swelling or hypertrophy of the nasal mucous membrane in the neighborhood of the ostium, by nasal polypi or foreign bodies in the nose occluding the opening, or by the formation of granulations around it, etc.

In such cases the symptoms which were formerly held to be characteristic of the affection, and which has been mentioned above, are found more or less developed.

If the exudation be at all considerable, the sinus becomes distended and its walls greatly thinned. The zygomatic region, the hard palate, the fossa canina, the inner wall, the alveolar region above the molars, the parts just below the orbita—any of these may bulge forward and give the finger the sensation of crackling or of an elastic swelling. In extreme cases complete

occlusion of the corresponding nostril is being produced by distension of the inner wall of the cavity, or the bulbus is pushed upwards and exophthalmos ensues. If communication with the nose is not re-established under such circumstances perforation may occur anywhere and a fistula be established in the gums, or the hard palate, etc. In almost all cases in which free secretion is impossible, violent neuralgic pains in the face and in the teeth of the upper maxilla of the affected side are complained of. Swelling of the soft parts of the cheek, sometimes of an erysipelatous-character, also occurs.

In many cases the obstruction is not of a permanent, but of transitory character. In such cases the patient, whilst suffering acutely during the time of obstruction, is greatly relieved as soon as from some cause or other the ostium becomes temporarily free and the purulent secretion finds its natural outlet into the nasal passages. Often, however, after a short time the opening becomes again obstructed, the old symptoms return and a fresh period of suffering occurs, to be terminated again by discharge of the accumulated secretion into the nose. Thus the affection may and does often exist for many years with alternating improvement and aggravation.

I have but briefly touched upon the cases in which actual distension of the walls of the cavity or fistula exist, for the reason that in those cases the diagnosis will as a rule offer no difficulties. Much more difficult, however, is the diagnosis in cases of temporary obstruction of the semilunar hiatus, or in such cases of nasal discharge in which, though the symptoms decidedly point to the passage of the pus from one of the accessory cavities of the nose, it cannot be made out with certainty, owing to excessive narrowness of the nasal cavity or to swelling or thickening of its mucous membrane or to the presence of nasal polypi, etc., which of these cavities, the maxillary sinus, or the ethmoidal cells, the frontal or the phenoid sinus is the affected part. It must also not be forgotten that several of these cavities may be *simultaneously* diseased.

In such cases a great many measures have been recommended, calculated to demonstrate the actual provenience of the pus from the antrum. Thus Stoerk, Bayer, Hartmann and others have recommended to introduce, after previous cocainization, a fine syringe or a slender ear-catheter through the middle meatus

into the natural opening, viz., the semilunar hiatus, and to inject through it some antiseptic solution with the triple object of clearing the obstructed opening, of demonstrating the source of the secretion, and of healing the suppurative process itself. Though it cannot be doubted that in a small number of cases this procedure is perfectly feasible, in the majority of cases it will be found, owing to the anatomical conditions of the parts, that it is very difficult, often impossible. Michel recommends forced injection of water into the nose, in the hope that the obstruction of the ostium maxillare, if only due to inspissated matter will give way. With the same object in view Hartmann uses the air douche, in the form of Politzer's bag. To this Ziem objects, arguing that parts of the foul secretion from the antrum may thereby be forced into the middle ear and may there set up serious purulent inflammation. He therefore employs for the same purpose a catheter, which is introduced through the mouth and upward behind the palate, and which is connected with an air balloon. By compression of the latter whilst the patient closes both nostrils condensation of the air in the cavity is obtained in the direction from behind forward, and the danger indicated by him is avoided. Hopmann, Stoerk and Walb suggest the introduction of cotton plugs or of laminaria bougies into the middle meatus. Link recommends percussion of the antrum. He presses a rounded stick made of wood, of about a finger's length, against the hard palate close to the second molar and percusses the free end with his finger. According to his experiences a clear sound is heard under normal conditions which becomes dull when there is fluid in the antrum.

Inasmuch as none of these methods can boast of universal success, though each of them has, no doubt, given satisfactory results in a number of cases, comparatively often the exploratory opening of the antrum becomes necessary. This may be either performed from the alveolar process or from the nose. If one of the teeth, the alveoli of which are known to be in close proximity to the floor of the sinus, be diseased, it will be most natural to remove the tooth and to penetrate by means of a drill or of a trocar through the alveolar process into the cavity. A similar procedure may also be adopted if the teeth should have been already previously drawn, provided that there is not too much shrinking of the upper maxilla. Ziem even formerly recom-

mended the probatory removal of a *healthy* tooth, if necessary. Against this proposal, however, much opposition has been raised, and in his last communication he supplants his former recommendation by the proposal to open the antrum *between* the two bicuspidis or between the second bicuspid and the first molar by means of a dental engine, and of a *very* fine drill of the diameter of one and a half mm. and of two to three cm. length. He states that by means of this procedure he has sometimes been able to open the antrum in from five to seven seconds, and that no damage is done to the patient. Thornwaldt, however, at the last meeting of German naturalists, demurred to the last-named statement, and said that the operation was frequently difficult, not free from risk and often *productive* of suppuration in the antrum. To obviate the establishment of a communication between the antrum and the cavity of the mouth for mere exploratory purposes, Krause, Schmidt and Thornwaldt recommend exploratory puncture through the *inner* wall of the antrum, by way of the lower meatus of the nose. Krause avails himself for this purpose of a specially constructed trocar, which is pushed into the antrum after previous cocainization through the nose, below the lower turbinated bone, as far as possible backwards; Schmidt uses a strong curved syringe and Thornwaldt a small trephine, which is put into motion by a winch. The last-named method has only so recently been introduced that no opinions have yet been expressed as to its usefulness; of Krause's trocar it is stated that Heryng that in his cases it could not be used, owing to narrowness and swelling of the lower parts of the nose; and as to Schmidt's syringe I can only say that in one of the two cases in which I have attempted to use it I did not succeed, in spite of using considerable force in perforating the very thick internal wall of the antrum, and that in the other I drew only blood, although on subsequent opening of the cavity through an alveolus pus was found in the antrum. Of course, the number of my experiences is much too small to base upon them any condemnation of the method, but I thought it right to mention them, in order to show that this otherwise simple and safe method can as little boast of applicability in all cases as apparently most of the other procedures which have been recommended.

That our diagnostic powers at the present time are still far from being satisfactory is evident from the number of cases in

which the antrum has been opened and no pus has been found. Thus so experienced an observer as Ziem states in his latest contribution that he did not find pus in the antrum in nine per cent. of the last sixty-seven cases, in which he opened the antrum by means of the dental engine!

Under these circumstances it would be a real boon, if the latest addition to our diagnostic means, which has quite recently been made by Heryng, which should fulfil the high expectations which this distinguished author entertains. Acting upon a suggestion the merit of which belongs to the late lamented Professor Voltolini, Heryng has, in ten cases observed by him within the last six months, with certainty diagnosed empyema of the antrum by electric transillumination (if I may coin that word) of the face. For this purpose he introduced in a *perfectly dark* room a small incandescent lamp of *at least* five volts., attached to a tongue depressor, into the patient's mouth. The patient closes the mouth, and the electric current is established, when the bones of the face, according to Heryng's experience, are perfectly lit through, and appear up to the orbit bright red. Now, if there should be empyema of the antrum, the side *remains dark*, and the diagnosis is secured. Only in one case did he not succeed, owing to abnormal thickness of the bones of the face. For further particulars I must refer to the original. I have not yet had the opportunity of testing the method, but a recommendation coming from Heryng must always command attention, and I can only repeat that, if the future should show the general applicability of the method, a great boon will have been conferred upon both patients and practitioners.

To be continued.

CHEAP DENTISTRY.—Law has its “shysters,” medicine its “quacks,” divinity its “imposters,” but it has remained for dentistry to cheapen itself and depreciate the value of its services to the public. Fancy a lawyer advertising “best advice only \$9, poorer quality \$5”; or a physician, “best prescriptions only 50 cents, common ones 15 cents”; or a clergyman, “best sermons only \$5.00 each, and if two be taken on a Sabbath no extra charge made for attending Sunday School in the afternoon.” And yet our daily and weekly papers contain scores of this class of dental advertisements, to the utter disgust of professional and intelligent men and women.—DR. J. B. WILLMOTT.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

ARRANGEMENT OF TEETH.

BY PROF. L. P. HASKELL, CHICAGO.

THE *Cosmos* for August contains an admirable article, entitled "Typical Tooth Forms," which is worthy the study of every dentist. I wish to call attention especially to the diagram marked "S," page 614, and the description on the previous page, a careful study of which will be a great aid in the proper arrangement of teeth.

It states that the tips of the six anterior teeth (in nature) form the arc of a circle, the radius of which is the width of the central, lateral and cuspid teeth.

A line at right angles to the median line, through this center, will pass through the centers of the second bicuspid.

A second line, parallel to this, through the posterior periphery of the circle, will pass through the posterior edges of the second molars.

The teeth in the arch posterior to the cuspids are almost directly in a straight line toward the center of the condyles, being deflected slightly inward at the anterior cusp of the first molar.

In the lower jaw, the four incisors are more nearly in a straight line than the upper incisor, and the direction changes sharply at the cuspid, and then forms a gentle curve along the buccal faces of the teeth.

I would suggest the dentist have a series of tin circles with handles from the posterior edge. Select one for the case in hand by the width of teeth to be used, remembering, however, that the so common use of *small teeth* where they do not belong would result, in the contraction of the arch and circumscribing the room for the tongue. I am not sure but it would be the means of teaching some dentists a lesson on this point.

To secure the proper arch to the grinding surface, a simple rule suggested to me by an old practitioner, I have found serviceable, as follows :

Arrange the *ten* anterior teeth so that they will be on a line when placed on a flat surface, and the molars dipping upward on an inclined plane.

Arrange the lower teeth to the above when placed on a flat surface only the incisors and second molars touch.

"Circumstances alter cases," so there can be no inflexible rule for the arrangement of teeth, and the dentist must use his judgment. As for instance, in very pointed jaws, especially where the lower teeth remain, and form a V-shaped arch, the upper teeth should be so arranged that the centrals are the most prominent, the laterals inside the circle, and the cuspids still farther inside. This is a very common form of natural irregularity.

I would further suggest that the *teeth manufacturers* might study the article referred to with good advantage, especially in the formation of bicuspid and molars. If they follow these typical tooth forms, we shall be rid of the numerous imitations of anything but natural teeth. I refer particularly to *plain* teeth, *thin*, *narrow*, too long often by one-third, with the *palatal* cusps of upper, as well as lower, longer than the buccal cusps.

Through the kindness of the S. S. White Co., we are permitted to present our readers with the cut referred to and also the description of Plate S taken from the *Cosmos*, August, 1889, page 613 :

"PLATE S.—THE LINES OF THE ARCHES.

Some years since Dr. W. G. A. Bonwill read a paper before the Odontological Society of Pennsylvania, in which he made the following claims :

That the lower human jaw forms an equilateral triangle, the base of which is the distance from center to center of the condyles, and the sides the distance from these points to the median line of the inferior incisors, the average measurement of the sides of the triangle being about four inches.

That in ninety-five per cent. of cases the superior jaw projects beyond the inferior, the depth of the underbite varying from three-eighths to one-sixteenth of an inch, and that in not more than five per cent. of articulations do the incisors come directly together.

That the ramus has a definite curvature, and that the depth of the underbite and the length of the cusps of the bicuspid and molars correspond therewith.

That the teeth in the arch posterior to the cuspid are almost directly in a straight line toward the center of the condyles.

The substantial correctness of these conclusions appears probable.

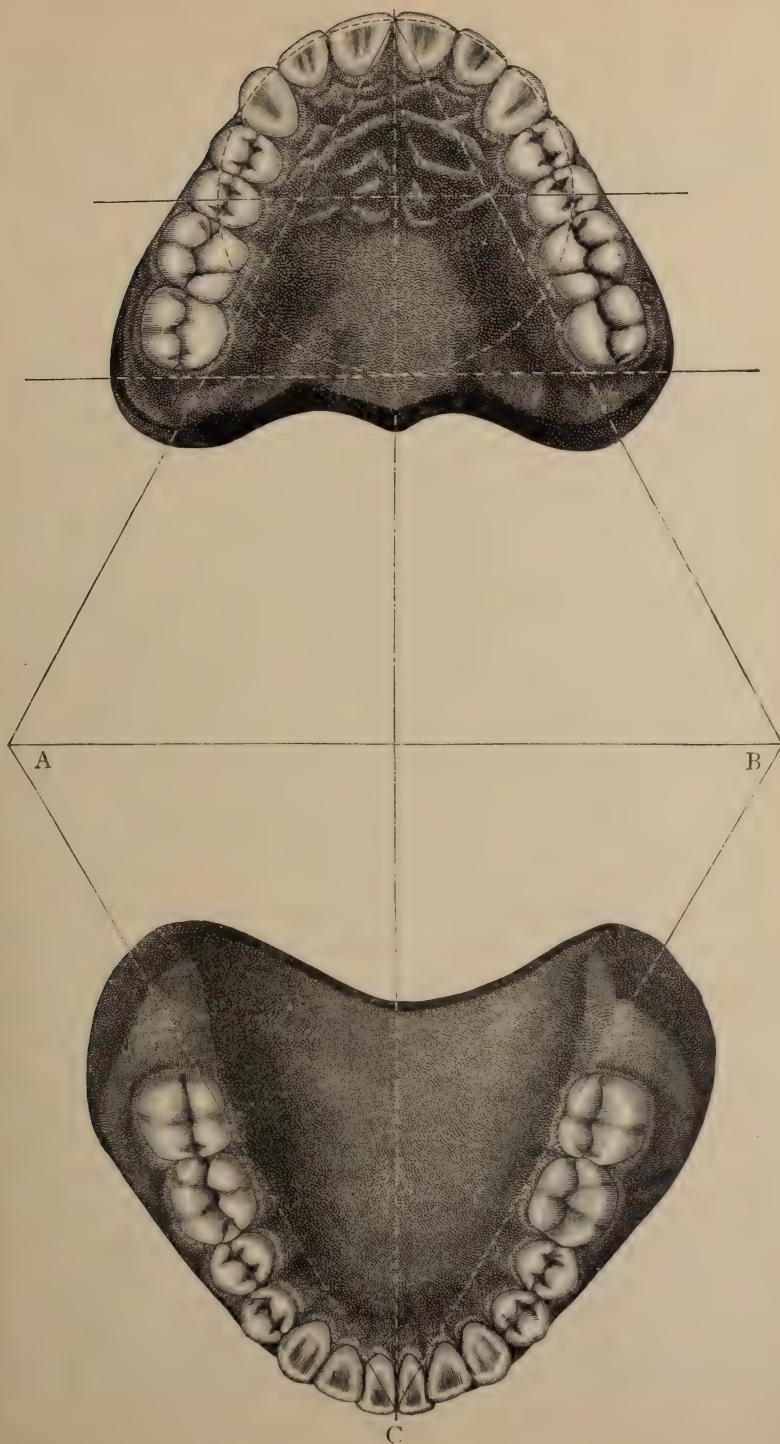
Plate S, which is a perspective view of the occluding surfaces of a set of natural teeth, shows the equilateral triangular basis of the inferior jaw. A-B shows the width of the base or hinge of the jaw; A-C and B-C show the length of the line from the condyloid process to the center of the curve of the inferior incisors.

The centers of the tips of the anterior superior teeth are in the arc of a circle, the center of which is found by measuring from between the centrals along the median line of the mouth a distance equal to the combined widths of the superior central, lateral, and cuspid, taken at the lines of greatest breadth. A line, at right angles to the median line of the head, through the center of this circle, which is known as the circle of the mouth, will pass through the centers of the second bicuspid; and a similar line, parallel to the first, through the posterior periphery of the circle, will pass through the posterior edges of the second molars.

The cuspid and the anterior buccal cusp of the first molar, it will be remembered, have been previously spoken of as forming respectively the primary and secondary springs of the superior arch; that is, they mark decided changes in its direction. In Plate S the superior central, lateral, and cuspid, as has been said, lie in the arc of the circle of the mouth. At the cuspid the direction changes; the buccal faces of the teeth between the cuspid and the anterior buccal cusp of the first molar lie in a straight line. At this latter point, which is usually prominent, the arch is again deflected slightly inward.

In the inferior jaw there is no secondary spring of the arch. The four incisors are more nearly in a straight line than their corresponding teeth in the superior jaw. The direction changes sharply at the cuspid and thence forms a continuous, gentle curve along the buccal faces of the teeth, though the lingual faces of the posterior teeth approach very closely to a straight line. (These latter points do not appear in Plate S, as the teeth were drawn in position to give a perspective instead of an exact face-view.)

PLATE S.*



SANITARY SCIENCE AND ITS RELATIONS TO THE CONSTRUCTION AND ADAPTATION OF PROSTHETIC DENTURES.

BY PROF. N. S. HOFF, ANN ARBOR, MICH.

It would seem that at this time there ought to be no occasion to call attention to such a subject, but the frequent presentation of disease of the oral cavity, caused unquestionably by faulty construction or adaptation of plates, bridges, crowns, etc., assures us that there is no impropriety in discussing it.

These manifestations clearly indicate the fact, that, in the effort to supply the popular demand for cheap dentistry, the fundamental principles of the dental artisan are not only being usurped, and the artist himself degraded, but the high privilege of the professionally educated dentist, viz., the preservation of the dental organs in a condition of health and integrity, which shall conserve the general health by maintaining and promoting the specific function of these organs, and rendering them incapable of inoculating other contiguous or remote organs of the system with disease, is either not sufficiently impressed upon the minds of many dentists to exert for good the power it should; or it is willfully and criminally ignored.

Great progress in the art of surgery, general therapeutics, and sanitary science is being made, because of the application of the knowledge of the influence which micro-organisms exert in the propagation of disease. Entertaining the belief that these micro-organisms exert an influence for harm in connection with the surgical, therapeutical and sanitary treatment involved in the preparation of the mouth for, and the construction and adaptation of artificial substitutes for natural teeth, we desire to call attention to this phase of the subject, with the hope that some suggestion may be made, which, if it should not prove to be of practical value, will excite an interest that shall lead to investigation and valuable results.

It is not my purpose in this short paper to set forth the definite relations of bacteria to my subject, or give in detail specific treatment—for I could not do so if I had the time and

space—but to show that there is a probability that a recognition of the principles of bacteriology in treating diseased teeth for crowns, bridges and plate dentures, and in the construction and adaptation of these dentures, will not only result in the comfort and health of our patients, but in the usefulness and durability of the appliances.

Prof. Miller has successfully demonstrated the presence in the mouth of a great variety of micro-organisms, while only a few of these have been isolated and their peculiar activities discovered, enough is known to convince us that there is no putrefaction of extraneous matter in the mouth, except in the presence of some form of bacteria, they are omnipresent of necessity. Whether these bacteria are pathogenic in themselves or not is immaterial; for it is known that by their functional activity the putrefaction or dissolution of the accumulated food debris in the mouth is accomplished, and the various chemical elements composing it liberated, to again unite with each other, the chemical constituents of the air and other favorable material that may be near by, to form new compounds, capable of destroying living tissue or at least impairing its functional activity by over stimulation to such an extent as to produce disease in the part.

That we have in the mouths of many people, wearing artificial dentures, crowns and bridges, all the requirements needed for the successful cultivation of bacteria, "goes without saying" almost, when we remember that these requirements are (a) body temperature, (b) moisture, (c) a suitable media,—accumulated food stuffs,—(d) the presence of a germ or spore to start the process. And to make the conditions even more perfect some germs are *aerobic*, that is, they are most vigorous in development in the presence of a limited supply of oxygen, which they readily get from the air passing through the mouth. Since these facts are brought to our attention, and we learn that these germs exert a destructive as well as a salutary influence, and this knowledge is being used to great advantage in other departments of medical and dental practice, is it not our duty to make such application of it to dental prosthesis, as reason and judgment based upon experience and experimental investigation will warrant? How then shall we apply it? Our first endeavor must be of course to stop the process of putrefaction, and we can only do this by withdrawing some or all the conditions necessary to its existence, sub-

stituting the artificial for nature's method of removing collections of extraneous matter from the mouth. Since we cannot possibly remove the heat and moisture from the mouth, we must direct our attention to the micro-organisms or their food. While this may seem at the outset to be a hopeless undertaking, we may be assured that it can be accomplished to such a degree at least as to render the influence of the germs so insignificant as to be no longer deleterious. How shall we free the mouth from these germs and prevent their accumulation and destructive influence?

By removing from the mouth everything that would favor their introduction and growth. Diseased teeth and gums should be cured, deposits on the teeth removed, and special attention given to the construction of all mechanical appliances that are to be placed in the mouth, making the attainment of cleanliness, in this connection at least, of *first consideration*. Remembering always that it is the quantity of germs that determines the extent of the injury rather than the quality. Healthy tissues will tolerate the presence of a small number of pathogenic germs and overcome the results of their activities, but large accumulations will break down living tissue. All hopelessly diseased teeth or roots, that may because of their diseased condition, cause or favor the production of germs, should be removed from the mouth. Teeth which may stand out of proper position in the arch, or are so inclined as to make it impossible to secure an accurate impression, or that will interfere with a snug adaptation after a plate is made, should be removed. Elongated and loosened teeth which will not admit adaptation without leaving large spaces about the plate for the retention of food, should be extracted. All roots that cannot be treated, filled and made healthy should be extracted. If retained they should be antiseptically treated and filled, and if they are not to be used to support crowns or bridges, should be dressed down to the gum and left smooth with no overhanging edges. All teeth that are to be retained in the mouth should be carefully cleansed of calcarious deposits, the gums, if congested or diseased, treated and restored to a normal condition before taking an impression, this work is often done (or not done at all) after the impression is taken and the plate made, so that spaces for the accumulation of food debris under and around the plate is the result.

It is possible that many cases of so-called rubber poisoning,

seen in the mouths of persons wearing vulcanite dentures, can be accounted for by badly adapted plates which retain accumulated food stuffs until putrefaction takes place and their chemical elements being liberated from new chemical compounds capable of destroying living tissue, or which by their stimulating and irritating effect produce a chronic inflammatory process. Some forms of bacteria seem to possess the power of forming by their presence a chemical compound, called a *ptomain*, which acts as any other chemical poison by producing its characteristic effects, not only locally but in the general system. The bacteria found in the mouth have not yet been sufficiently studied to establish any theory as to their functional activity. We simply know they are present under certain known conditions, and from what we know of the activity of micro-organisms in other relations to the body in a state of health and disease, we are justified in believing that they may take some part in the destructive processes of the mouth.

We do not wish, had we the space, to take up the consideration of the subject of the treatment and filling of roots, preparatory to making them serviceable in crown and bridge-work. Every dentist thinks he has as good a method as any one else. But I would insist that this should be done in the most thorough manner by the most approved antiseptic methods. A most excellent paper on this subject appears in the Dec., 1889, *Dental Cosmos*, written by A. Retter, D.D.S., Utica, N. Y.

Briefly a word or two on the construction of dental substitutes. After an accurate impression has been secured, the selection of a proper material for a base is important. Without taking into consideration all the ordinary requisites of a base upon which to mount teeth, we will only call attention to those qualities that are essential to the construction of a plate that will secure a sanitary condition of the mouth. It must be a material that can be closely adapted to the mouth, that will have sufficient stability and elasticity to admit of the force of mastication without permanently changing form; one that can be neatly finished and highly polished and to which the teeth can be attached in a substantial way without providing spaces for the accommodation of food debris; and one that will not absorb fluid substances from the mouth and thus become, if not in itself filthy, incapable of being thoroughly cleansed.

In this connection it may be necessary for us to narrow

down to one style of denture, in order to accomplish this object, namely, what is known as continuous-gum, for in fact this style of denture is the nearest approach to a clean plate that we know of. Gold or silver plates for partial dentures with soldered teeth are comparatively clean, and likewise gold plates with rubber attachment where the work is carefully done and the rubber properly vulcanized, but there is so much faulty work done that even these plates are difficult to keep in a sanitary condition long enough to pay for their construction. The cast metal plates are easily made, can be closely adapted and are easily kept clean, but they have other disadvantages that would rule them out in many cases. Rubber and celluloid plates are objectionable because it is almost impossible to keep them clean after they have been worn but a short time.

Bridge-work is usually bad because of the fact that it is so constructed that it cannot be readily cleansed by the patient. Even the small bridges and the removable bridges are difficult to cleanse, they cannot be made so as to be reliably self-cleansing. But after all bridges are not so likely to produce diseased conditions of the mucous membrane for the reason that they do not come into as close contact or to as large an extent as plates, and the germs and their products are rubbed off during mastication, diluted with saliva and carried into the stomach where they are either destroyed by the gastric juices or rendered harmless. The mucous membrane is kept continually irritated by the presence of the germs and their products under and about a plate.

Crowns if properly made and adapted are unobjectionable. They should imitate the natural teeth as perfectly as possible in size and form, thus securing a continuous masticating surface with the V-shape space for cleansing. If collar crowns are used, the collars should fit accurately, pass beneath the gum margin but not enough to leave a space between collar and root, or to encroach unnecessarily on the peridental membrane. Porcelain, pin and pivot, crowns should be accurately adjusted and frequently examined to provide against spaces being caused by their derangement.

If we have not presented this matter in a practical and satisfactory manner, we will hope to have drawn attention, by suggestion, to a subject that will bear investigation with a probability of satisfactory results. If a study of the relations of prosthetic

dentistry to sanitary conditions of the mouth is encouraged, there is no question but it will result in more care in the selection of suitable materials to be used, as well as in more artistic construction, and a branch of the profession that is fast being turned over to the tyro or charlatan will be rescued and made attractive to the many bright young men now entering the profession.

SOME HISTORIC POINTS AND PRACTICAL HINTS ON CROWNING.*

BY THOS. G. READ, L.D.S. ENG. D.M.D. HARVARD.

THE clinical aspect of this subject as far as possible, I shall avoid, therefore the making of any special crown will not be described.

Crowning was probably attempted at a very early date.

In former days teeth required to be very loose to be removed, as the ancients had no suitable instruments with which to extract and there was a strong feeling against mutilating the body. The hard work that the anterior teeth had to perform in tearing flesh from bones, and other uses, to which they were put, moreover their exposed position rendered them very liable to be broken.

No doubt some effort was made to correct this disfigurement, and it may be readily conceived that when an opening was noticed in the broken off part to correspond to one in the remains of the tooth left in the jaw, the broken or the corresponding part of another tooth was connected to the stump by means of a dowel or pin often miscalled a pivot.

The earliest crowns were portions of natural teeth both of human beings and of the lower animals and artificial ones carved from various tooth-like substances.

I shall endeavor to conclusively prove to you that all crowns now used are modifications of methods known and practised forty years ago.

In the year 1774, M. Duchateau, an apothecary of St. Germaine, and M. de Chemant, a dentist of Paris, commenced a series of experiments with the object of making teeth of porcelain, and after several years of perseverance they produced a material

*A paper read before the Students Society National Dental Hospital, and published in the *British Journal of Dental Science*.

the merits of which were fully recognized by the profession for dental uses.

Crowns were soon made in this material, they roughly resembled teeth and had a hole for a dowel, they were rather weak, being made of a poor kind of porcelain resembling wedgewood ware glazed over with a semi-transparent glass of a greenish or bluish tint, the dowel used to set them with was usually of wood alone, or wood and wire.

But little improvement was made in their appearance until the year 1825, when Samuel W. Stockton, of Philadelphia, and a few others made a far better composition and produced teeth much more life-like in shape and shade; in 1830 they made some crowns which were in many respects better adapted for use than any of a later date; the dowel hole was deeper, of better form and more conveniently placed.

In 1831, Dr. Lee of Alabama, used instruments very like those described and used later by Dr. Brutter, these are of very little use as they are only suitable for circular roots.

In 1841, tube teeth with a metal dowel were used.

In 1849, a hollow dowel was patented for permitting gases and secretions to escape from the apex of the root.

In the same year, Dr. Lawrence, of Philadelphia, patented a crown similar to the Bonwill, it consisted of porcelain with a counter-sunk aperture for a screw.

Dr. Morrison about this time used a crown very like a Richmond. In describing this he mentions a band or collar fitting around the root supporting a crown with a dowel. The Logan is a modification of the old porcelain wood dowel crown, platinum being used instead of wood.

An ideal crown should reduce the chance of destruction of tooth substance to the minimum, be non-irritating to the adjacent tissue, natural in appearance, strong enough to resist the strain of mastication and capable of being quickly constructed.

The only apparent manner in which a stump that is properly crowned can be lost is by disease in connection with the periosteum.

Crowning should not be attempted when the tooth is very loose, necrosed, exostosed, or surrounded with unhealthy gum.

It will be found impossible to adapt a collar or cap crown in cases where the natural crown has been broken away for some

time and the adjacent teeth have moved so as to form a triangular space, the base being towards the gum.

In England, it has been taught that in cases where the foramen at the apex of the root is widely patent such as in immature teeth, crowns could not be satisfactorily applied, but practical experience has proved this to be an error.

You are most of you aware that I teach that a *chronic* abscess, in connection with a broken-down tooth, discharging itself through a fistulous opening, that shows no tendency to yield to treatment by medication will often rapidly disperse, where the canal is filled and the stump crowned and bitten on.

The probable cause of the abscess in Nature's abhorrence of an useless member, therefore the broken-down tooth acts as a source of chronic irritation to the adjacent tissues, but when crowned and bitten on it again coming into use the surrounding part is stimulated and the inflammatory products are re-absorbed.

As an instance I might mention a case communicated to me by our esteemed late House-Surgeon, Mr. Fisk.

At the beginning of last winter, Mr. Fisk at my suggestion crowned a broken-down tooth having a chronic abscess in connection with it that had not shown the least improvement, after several weeks of dressing. About two weeks after crowning, the abscess had disappeared. In the summer the patient returned with a very swollen face, reporting the crown to have come away a few days previous; it was replaced and swelling rapidly subsided. When a bicuspid or molar is broken down and has a living unexposed pulp, it will usually be best to apply an all gold cap, as then very little tooth tissue need be removed, but in such cases the pulp is very liable to die.

If the pulp be dead and there is sufficient tooth substance standing to hold the rubber-dam, apply it; should it be very much broken down, dress off the enamel and shape the root as for a collar, then make a band of thin metal to fit, and use this to hold the rubber-dam. The rubber-dam having been applied open the mouth of the pulp chamber and cut away all the dentine that forms the constriction at the neck, but do not drill out the canals, the perfect reaming out of canals is in most cases an impossibility, owing to their irregular shape and direction. Also there is a chance of perforating the side or driving septic matter through the apex, and moreover the stump is weakened.

Any part of the constriction left, acts as a scraper removing particles of debris from the bristle as it is withdrawn.

In filling the root this septic matter will be pushed to the extreme apex.

Having cut away the constriction at the neck and thus formed the canal into a funnel, remove all debris of pulp and tooth, then syringe the canals out with an antiseptic wash. Very fine bristles, roughened with a file to hold a strain of cotton, should be worked up and down the canals to thoroughly clean them.

The canals having been well washed out, should be dried and filled with a material of low conducting power, which can be easily introduced and will form a solid filling at the apex.

Gutta-percha and oxychloride of zinc are useful for filling roots.

Dr. Whitten, of Boston, states that oxychloride of zinc turns any remains of pulp to leather. He introduces it on a fine bristle, at first very thin, gradually using it thicker as the root is filled until at last he introduces the pure powder.

I have modified his method in finishing by introducing a gutta-percha cone, which acts as a piston on the soft oxychloride of zinc, thus filling all small spaces.

Oxychloride of zinc is very useful in cases of irregular shaped roots where it is impossible to remove the pulp thoroughly, but for ordinary cases dissolved gutta-percha and gutta-percha cones are best.

The cones should be made as wanted, and then they will be about the size of the canal, and the full piston action is obtained.

The canals having been filled the upstanding remains of the tooth is cut away. The greater part of this is readily removed by using a drill Messrs. Ash & Sons have made me, it is simply a long fissure bur with a chisel point.

Two holes are made with the point from the labial to the lingual surface, one at the mesial the other at the distal part of the tooth. The tissue between the holes is now cut away with the fissure part of the drill, then one blade of a pair of excising forceps is placed in the labial, and the other in the lingual opening, the handles are pressed together, and the crown comes away.

The above is the method employed in California when felling large trees.

If a crown that solely depends for its support on the dowel is to be applied, cut the stump down to a point a little beneath the gum margin, then it will not be so likely to decay by decomposition of saliva and other substances.

When a gold cap is to be used the stump may be left, standing well above the gum margin, but the sides must be made parallel.

Should a crown with a collar be applied, cut the stump away at the labio-cervical margin to a point a little beneath the gum edge. It may be left standing above the gum at the lingual surface slightly.

In order that the collar may fit the root closely all the way down, the sides of the stump should be made parallel. This is best accomplished by paring off the enamel all around the stumps with chisels.

Dr. Whitten's broken back and Dr. Bennett's Nos. 5 and 6 are useful for this purpose. The enamel having been trimmed off finish shaping the stump with a safety point shouldered fissure bur.

If the stump is shaped cone-like the collar will stretch and thus become loose every time it is removed in fitting, and it may be driven past the portion trimmed, when the projecting edge will be a source of constant irritation to the surrounding tissue. Moreover the ledge thus formed will permit of the accumulation of decomposing secretions. A dowel on no account need be of greater length than half an inch.

When using a metal-backed tooth in crowning an incisor or canine it is advisable in preparing the root for the dowel to cut as far as possible in the lingual aspect of the canal, as by this means the head of the dowel will be imbedded in the solder and thus be more strongly fixed to the cap.

When using a Logan dowel prepare the pulp-canal with a conical drill similar in shape.

If the crown is to be a simple dowel crown, previous to taking an impression shape a piece of wood like the dowel, and place this in the pulp-canal, removing it with the impression. For a gold cap or collar crown an impression is best taken as follows:

Take a strip of telephone metal and fit it to the stump as if about to make a collar of that material. When it is roughly fitted place it upon the stump and take an impression by the

patient biting into a piece of modelling composition or wax. When quite hard remove this from the mouth and cast in plaster, with the little band in position.

The following are the best metals for crowning :

Coin gold for gold cusps and bicuspid and molar bands. Green gold for incisor and canine collars.

Soft platinum for incisor and canine collar tops. Crowning metal one side gold and the other platinum for bicuspid and molar bands and backing certain teeth.

Fit coin gold bands roughly to the model obtained with the little telephone plate and then fit them in the mouth.

All fitting of green gold collars should be done in the mouth. In soldering a band or collar always have the join at the lingual part, and solder edge to edge. If the join is lapped there is always a point where it does not fit the stump.

The best clamp is a piece of binding wire. Do not mallet bands or collars on, if the stump is properly shaped and the band is the right size it will go on far better without the mallet.

In trimming a collar down at the labio-cervical margin always leave a little extra height for final driving home. The edge of a collar or band should as far as possible conform to the alveolar margin.

To make the surface of a collar flat, to which the top is to be fastened, use a flat file.

To prevent bands and collars bending in filing, fill them with composition.

In soldering on tops use as little solder as possible, place it on the outer edge and on a soldering gridiron solder over a Bunsen flame.

The circumference of a tube tooth should be slightly larger than the cap it is to be fixed to, after fixing grind it to the same size.

The edge of a flat tooth should project just over the labio-cervical edge of the cap, but this overhanging part must be all cut away after soldering.

Back the porcelain with gold when the teeth are of a yellow shade, and with crowning metal with the platinum towards the porcelain when of a bluish tint.

Often for strength when backing a frontal or lateral tooth, it is as well to grind the porcelain away at the cutting edge to a

gradual slant and carry the back up to the extreme edge. Occasionally on account of darkening the color this should not be done, but the backing cut away nearly to the pins.

In such cases a flat should not usually have been used but a tube tooth. When making a bicuspid or molar faced crown, the backing should be carried over the cutting and the cervical edges.

The pin surface of a saddle-back tooth should be ground flat with a safety edge stone, before being backed. In backing the pins should be bent inwards as they are not in the way at the labio-cervical edge.

Specimens I exhibit will illustrate the preceding points better than a fuller description. The band to which the saddle-back tooth is soldered should be cut down to a gradual slope from the lingual surface to the labio-cervical margin with a flat file.

To obtain the cusps for a gold crown either place the band on the stump and fill it with composition, or wax, which is then bitten into. The bands and contents are now removed and cusps are carved in this composition or wax, an impression of which is taken in moldine and cast in fusible metal and the die thus obtained is used to strike up the cusps; or my own method which I find much more expeditious is to strike up cusps in Messrs. S. S. White's dies and knock down the places bitten on with blunt punches. This avoids the unsightly appearance produced when in grinding gold cusps to the bite, the solder is exposed and thus rendered liable to discoloration.

Fix all crowns by horizontally grooving the pulp chamber and notching the dowel if one is used; dry out the canal and fill it and the interior of the crown with oxyphosphate of a creamy consistency. Drive the crown home with a notched tooth-brush handle, and one or two light blows with a lead mallet.

When the setting is quite hard trim away all surplus of cement with a broken-back chisel.

THE BENEFICIAL RESULTS OF DELAY IN DENTAL OPERATIONS.

In an article on this subject, read at the Central Dental Association of New Jersey, DR. J. ASHLEY FAUGHT says: There is but one other instance of the beneficial results of delay in dental operations to which I desire to refer to before closing. We all know from experience that artificial work which is paid for, gives

more satisfaction to the patient and less trouble to the dentist; and that, therefore, it is well to get remuneration in advance, or at the earliest possible moment. There is a reverse which is good practice. The following recital will illustrate it: A lady somewhat advanced in years applied for a denture—difficult mouth—trouble anticipated and estimate made accordingly. Patient thinks the fee too high, but is assured that it is not, and that no charge will be made until complete satisfaction is given. Is informed that dentist is, financially, comfortably situated, and in no hurry to obtain her money—that he appreciates that a poor plate is worth nothing, and that a good plate is cheap at the mentioned fee, and only desires to be remunerated when she feels satisfied that the worth of her money has been received. The denture is completed and placed in the mouth. Patient states that it feels comfortable, and expresses a desire to know if it will serve in eating. An answer in the affirmative is given. Patient is pleased to hear the statement, but would like to be sure, and has brought a cracker along with which to test it. Dentist informs her that the cracker cannot be used, and that she will not be allowed to eat with the teeth at all for a week. That disobedience of this order will absolve him of further responsibility. The tissues are thus given time to adapt themselves to the plate; to make for it a nice receptive bed; and the patient in the meantime has become accustomed to the teeth and learned to manage them; and when eating is attempted much satisfaction will be had by reason of the delay. The little faults of articulation have also been corrected, as they presented themselves from day to day, and the patient has become quite tired of complaining, in fact, can really find nothing about which to complain. Inquiry is now made if there is anything the dentist can correct, or do to make the result more perfect. The patient admits that there is nothing. The bill is presented, with the excuse of not paying it because the plate does not fit, thoroughly eliminated. If the fee has not been set in advance, opportunity exists to fix the charge in proportion to the annoyance and trouble that has been incurred. If the bill had been rendered immediately upon first placing the plate in the mouth, all this extra service must needs have been given gratis.—*Archives.*

A NEW IMPRESSION TRAY.

MR. DAVID HEPBURN described a slide section tray. Its object was to make plaster impression-taking easier and avoid "dragging" when a plastic modelling material was employed. It consisted of two portions, one resembling an ordinary impression tray, only with the anterior portion of its external rim absent. The second portion consisted of a slide to which is attached the "missing" portion of the external rim. The slide works upon the handle, and when pushed into place completes the tray. In applying this tray, say in a case of six front loose projection with narrow necks standing in the upper jaw, if modelling composition is used, the slide is removed and the tray filled with the plastic placed in the mouth. It is brought well up to the backs of the teeth and held until well hardened. A roll of soft composition is then placed on the exposed anterior surface of the teeth, the slide is applied and pressed home, and so the impression is completed. To remove the impression, the slide is withdrawn and the tray likewise, and they are again united outside the mouth ready for casting. In taking a plaster impression the first part of the procedure as detailed is pursued, only plaster is of course substituted for modelling composition. If the plaster curls round the anterior portions of the teeth, when hard enough it is pared off. In the second stage—obtaining the impression of the anterior surface of the teeth—modelling composition is again used as described above. This tray is applicable for cases of bar lower cases when the bicuspid incline inwards or the incisors project, in cases of marked erosion, irregularity or cleft palate.—*Jour. Brit. Dent. Asso. Report Odont. Soc. G. B.*

PROCESS OF SOLDERING SMALL PIECES OF GOLD WORK.

AS THE saving of time is an object to most dentists, I will describe a process of soldering small pieces of gold work, which, though not new to all, may be of service to many. If you have a plate with two or three teeth which you wish to attach by means of solder, back the teeth and fasten in position by means of hard wax; then take moulding-sand and wet it thoroughly, until it is of the consistency of soft putty; place this on your soldering block, press the plate into it, and bring the sand well up around the teeth. Now take your blow-pipe and throw a

broad, gentle flame around the outer edges of the sand, taking care not to let the flame touch the plate or teeth until the water is driven off and the wax begins to blaze; then direct the flame upon the wax and burn it off. Scrape well the parts upon which you wish the solder to flow; then place on the solder and borax, and proceed as usual. Partly fill a saucepan with water, and place it over a gas or oil stove, and when it boils hold the case, wrapped (investment and all) in a cloth, over the steam for half a minute close to the water; then drop it in, remove and take out the piece. Clasps and small regulating pieces are held together and soldered by this process very quickly. I have yet to crack my first tooth by soldering in this manner, which, I think, is due to the fact that the expansion by steam heat is more uniform than by dry. Sand which has been used for moulding purposes is dangerous to use, as particles of zinc or lead may be present, and thus become alloyed with the gold.—DR. J. BOND LITIG.

FALSE TEETH AND NEURALGIA.

DR. N. STEVENSON says: I have recently had to treat several very severe cases of facial neuralgia, which would have been cured years ago if they had been sent to a dentist. I believe there are many people suffering from diseased teeth, or are dyspeptic from inability to masticate their food properly, who never receive any suggestion from their doctor about the state of their mouth; on the other hand, some physicians always insist that the teeth shall be put right before any other treatment is followed. The present fashionable mode of immovably fixing false teeth into roots and naturally healthy teeth, is responsible for an increase of neuralgia, and should, I think, be discouraged in every way. It is surely unscientific in principle, and must in the result end in disappointment or more serious evil. All false teeth (except those fastened singly into healthy roots), ought to be easily and frequently removed for cleansing, and should never be allowed to damage the natural teeth.

HOW TO TAKE A WAX IMPRESSION.

HEAT the wax until it has about the consistency of dough, then proceed in the usual way to make the impression, pressing the wax moderately against the ridge. Remove carefully, and

with a hot knife cut away the surplus wax, cool slowly, and when quite hard replace in the mouth holding it solidly to place with the fingers, at the same time pressing hard and thoroughly against the labial and buccal aspects of the ridge with the thumbs until the gurgling of saliva ceases. Now if the impression feels tight to the patient it should be carefully removed, but should it fail to adhere tightly it should be pressed more heroically until it will remain in position without ulterior support. A re-insertion of the impression in the manner described after it has cooled, produces an astonishingly successful result. This method applies especially to full cases, 90 per cent. of which can be successfully worked. It is simple; try it.—DR. A. N. COATES.

TRIALS.

SOME of the most trying experiences in a dentist's life are caused by people who expect a great deal more than it is possible to do. One of these is that many people expect to get a set of artificial teeth, a few weeks after insertion, that will do as good service as their natural teeth and give no more trouble in use. They are always disappointed and hold the dentist responsible for the failure. The sooner it is understood that no artificial substitute for any of nature's organs can do the service required of it as well as the natural organ it replaces, the sooner people—many people at least—will cease to worry the dentist with the troubles they experience in wearing artificial teeth.—DR. D. V. BEACOCK, *Dom. Jour.*

SECOND SOLDERING.

WHEN it is desired to solder a piece that has been soldered in another place, most gold workers consider it necessary to use a softer solder, which shall flow at a lower temperature than that first used, that the unsoldering of the previous work may be avoided. This is needless, if the solder used in the second case be placed in mercury until the surface is slightly amalgamated. If it be then used it will flow very readily, while the appearance of the finished piece is not injured, as the mercury is sublimated in the heating, leaving the solder as it originally was.—BARRETT.

HOW CHEAPLY some people value their personal appearance when it comes to artificial teeth! The very best that can be

made are but poor substitutes for the natural teeth. It is a remarkable fact that you cannot get a good, first-class article for a third or fourth class price. This remark applies to artificial teeth as well as to boots and shoes, or watches and other merchandise.—DR. D. V. BEACOCK in *Dominion Dental Journal*.

QUERY?

I WANT to ask the following question through the JOURNAL: How would you replace a piece broken squarely across from a good, sound central incisor? Pulp not being exposed. Piece broken off is about $\frac{1}{3}$ of the size of the crown. K. G.

Editor's Specials.

"Write the Vision and make it plain."

PASSING AWAY.

ANY survivor of the "times gone by" could not fail to be seriously impressed when looking at the members assembled at the late meeting of the Ohio State Dental Society, as they sat in council at Cleveland. So many of us old stagers were conspicuously absent, while our places—or rather the places where we had been wont to sit, were filled by members younger and more fully alive to the interests of the profession and the dear people. There used to be a group of co-workers that from year to year sat contiguous to each other, and not generally very far from the president's chair, their positions assumed by instinct rather than by design, and this group was much reduced in its representation at the late meeting. Almost any of you can call the roll from memory: Williams! Rehwinkel! Keely! C. R. Taft! Berry! All promoted, says Echo. J. Taft! Present—with youth renewed like the eagle's, so that he is not lonely among boys like C. M. Wright, Emminger, Harroun, etc., to say nothing of the venerable, volatile Smith. A few of the group not yet called hence, like Watt, have evaporated into different stages of dryness. In looking over the names of members present, we see only J. Taft, of the group referred to, active and busy yet, even though, forty

years ago, it was taken for granted that he was alive because not strong enough to "kick the bucket."

But such things must be, and our duty is to make the best of them. What does it matter that some of us die, if only better men are ready to fill our places? We see in this that dental science is like the Laureate's brook, Men may come, and men may go; but it runs on forever.

But the State Society can afford to spare the group just considered if a younger group that might be named only do their duty. When Elijah the Tishbite went up in a chariot of fire his mantle fell from him. It was not carelessly left lying to be driven to and fro by the winds, but was promptly taken up by Elisha, not merely to be cared for as a relic or keepsake, but to be *used* as an emblem of the divine power behind it, as he had seen it used by its late owner, in suspending the great force gravitation to the extent necessary to divide the river, and make a dry footpath across it. We can imagine that the river having but recently yielded to a blow from the mantle in the hand of the Tishbite would recognize the victorious mantle, even though in the hand of the Tishbite's servant, and surrender at once; but the confidence of Elisha is not in the mantle, for, as he smites the water, he asks "Where is JEHOVAH the God of Elijah?" And a dry pathway is prepared for him who already has a double portion of the Spirit of Elijah.

Now if the members of the State Society, a little younger than the ones above considered, will take up their mantle of unselfishness, courage and hope, and use it as legitimately and faithfully as did Elisha that of Elijah, they will excel their predecessors as far as Elisha did Elijah, and the profession and the world will be blessed accordingly. But the Jordan of ignorance will never be divided by a blow from a mantle composed of selfishness, jealousy and unkindness.

RESOLUTIONS ON THE DEATH OF DR. C. H. DYER.

WE are called upon to chronicle the death of Dr. C. H. Dyer, at his home in Grand Rapids, Mich., on Dec. 27, 1889, aged 45 years. Dr. Dyer was President of the Grand Rapids Dental Society, and Vice-President of the Michigan State Society. The

following resolutions were passed at the last meeting of the Grand Rapids Dental Society:

WHEREAS, Our brother, Dr. C. H. Dyer, has fallen a victim to the spoiler in the very prime of his manhood, and at the period of his greatest usefulness in his profession; and

WHEREAS, His many excellent qualities of heart, his geniality of manner, ready wit, sympathy for suffering, have secured him a warm place in the hearts of patients, friends, and professional brethren; and

WHEREAS, The high standard of excellence always aimed at by him was a constant incentive to the younger members of the profession to attain to a greater efficiency, and his absolute hatred of everything which tended to lower the standard of the profession greatly endeared him to its progressive members, not only in this city, but throughout the State; therefore be it

Resolved, That in the untimely death of our brother, his family have suffered the loss of a kind husband and father, the community a good citizen, while the dental profession has lost a leading member and this Society its capable and efficient president.

Resolved, That we extend to his family our sincere sympathy and commiseration in this their hour of sore trial, and commend them to Him by whom the falling of even a sparrow is not unnoticed.

Resolved, That copies of these resolutions be presented to the bereaved family and to the daily newspapers of the city, and be embodied in the minutes of this Society.

Signed, { L. D. WOOD, D.D.S.,
W. A. STUDLEY, D.D.S.,
J. WARD HOUSE, D.D.S.,

Committee of the Grand Rapids Dental Society.

THE ELLIOTT SEPARATOR.

THE Ivory separator is said to be a useful instrument, and well worth a place in every dentist's outfit. -- *Brit. Journal of Dental Science.*

Our esteemed contemporary probably refers to the Elliott Separator manufactured by J. W. Ivory, as we understand Dr. Ivory has no separator of his own invention. We have had the pleasure of thoroughly testing this separator and unhesitatingly say that it is far superior, in our judgment, to any we have

tried, for incisor teeth. It is simple, easily adjusted and entirely out of the way so that the operator has free use of his instruments. It is, indeed, worthy of a place in every dental office as all who have used it will testify. B.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

TOOTHACHE REMEDY.—The following is recommended by a contemporary as a good anodyne in odontalgia: Morphine acetate, $\frac{1}{2}$ grain; oil of peppermint, 5 drops; phenol, 20 drops; colloidion, one drachm. Apply with cotton.

TO ROTATE A TOOTH.—DR. R. B. ADAIR has a platinum band, to which is soldered a little cylinder; one end of a coil of very fine piano-wire is placed in the cylinder; the other is flattened and passed between the teeth. Almost any tooth can be thus rotated in two or three days with very little soreness or annoyance.

TO OBTAIN A COCAINE SOLUTION.—A convenient and accurate rule to determine the number of grains to be used in making the various per cents. of cocaine, is the following: Multiply 60 drops of water (3j), by the per cent. desired, the result will give the number of grains required. Example—To make a 2 per cent. solution to the drachm of water, 60 drops X 2 per cent. equals 1.20 or 1.2 gr.; to make a 4 per cent. solution of the same 1.2 gr. X 2 per cent. equals 2.4 gr., or 60 X 4 per cent. equals 2.40 or 2.4 gr., etc.

HOW TO CLEAN HYPODERMIC SYRINGES.—Syringes, whose canula have become obstructed so that a fine wire cannot be drawn through, are cleaned by holding them for a moment over a flame; the foreign substance is thus quickly destroyed and driven off. If a wire had been rusted into the needle, it should be dipped in oil before holding over the flame. To remove the rust from the interior of the canula, it is well to pass oil through the canula, then heating it: then rinse it out with alcohol. The needle is then ready for use.—*Deutsch Med. Wochenschr.*

BANDS FOR REGULATING.—DR. CAMPBELL described the method he had adopted for making rubber bands for regulating purposes. He had been dissatisfied with those usually supplied for the purpose, as they so quickly lost their elasticity, due, he imagined, to the rubber from which they were made being adulterated. With different sized punches, such as those used by workers in leather, he cut out rings from rubber-dam, using larger or smaller rings, and thick or thin rubber, according to the case for which they were required. He found they retained their elasticity well, and were far more serviceable.

FILLING TEETH WITH ZYLONITE.—DR. G. H. FULLER says: The July number of the *Dental Advertiser* contains an article by Dr. Morgan Adams, on "Filling Teeth with Vulcanite." The reading of the article led me to experiment in the same direction, but using zylonite instead of vulcanite. The cavities and material were prepared and used in the manner recommended by Dr. Adams, with the exception that the zylonite was heated in glycerine.

I inserted six labial fillings of the zylonite three months ago. I examined them recently and found them all perfect, except one. If care is taken in selecting the color to correspond to the teeth, zylonite makes a filling difficult to detect.—*Dental Advertiser*.

TREATMENT OF ROOT CANALS.—Having removed whatever more solid remnants there may be, I wrap a few fibers of cotton or silk around a broach and then repeatedly wipe or mop out the canal with a strong solution of ammonia, which aids in the desiccation of the septic contents of the canal and tubuli. It must be remembered that the septic matter is not only in the root-canal, but in the dentinal tubes. To remove it from or destroy it in these tubuli it must be reached by imbibition of fluids which will change its character so it can be more readily washed out or subsequently affected by the germicides used. Carbonate of sodium packed into the pulp-chamber and root-canals and left for a day, well sealed in, will also accomplish this object. Indeed, I believe it to be one of the very best applications at this stage of the treatment, and I have the best success from it. It saponifies and renders soluble the septic contents so that the canals may be readily washed out with hot water and made ready for the dressing with a germicide.—DR. A. RETTER, *Cosmos*.

AN IMPROVEMENT IN MAKING PORCELAIN-FACED CROWNS.—Crown-workers have generally found it extremely difficult to make a good joint where the porcelain face meets the band or cap for the root. Dr. J. G. Hollingsworth, of Platte City, Mo., obviates the difficulty by the following method :

After grinding the tooth to fit the band or cap, take a strip of platina wide enough for a backing ; solder to it a strip of pure gold thirty-two guage or thinner, using pure gold for solder. Then back up the tooth so that the gold half covers the cervical part of the tooth and burnish the gold completely over that portion. Now put tooth and cap in proper position and invest as usual. It will be readily seen that the solder will completely fill all space between the tooth and the band or cap, and the joint between the tooth and cap, being entirely made by the gold which has been burnished over the cervical end, is absolutely perfect, showing, instead of the dark line so usual at that point, a beautiful joint perfectly clear and white. Try it and you will be convinced. The method is, we believe, entirely original, and to Dr. Hollingsworth belongs the credit of its invention. We have tried the plan and found it a most admirable one.— *West. Jour.*

HORSE SENSE.—A GOOD THING TO HAVE.—DR. S. G. PERRY says: I think a little horse sense, in the practice of dentistry, of more importance than anything else. I do not know that there can be any rules of practice set up. I do not know of any criterion that must be taken by one individual as the judgment of the profession. Here and there we know of a man who has what you might call horse sense, and we instinctively follow the lead of such men, and trust to their judgment when we distrust our own. I do not know that we shall ever get at what we call true data, or be able to formulate any reliable rules of practice. It must be always the result that we seek, and not the method of getting at it ; although, if I were sitting in the chair to have an operation performed, I should prefer it gotten through with as easily and as quickly as possible, whether with a good result or poor. I sat in the chair only the other day to have one or two operations performed, and I thank Heaven most heartily that they were performed, because it gave me an opportunity to realize a little more fully than I had done what it is to be a patient in the chair, and how necessary it is for us to be as mindful as

possible of all the little details that make for the comfort of our patients.—*Cosmos*.

SYSTEMIC TREATMENT FOR ABSCESSED TEETH.—With posterior teeth the drilling to reach the sac is nearly always an uncertainty, and in case of failure is accompanied by increased pain and destruction of tissue. In such cases the pepper plasters and systemic treatment will aid in the matter promptly, reducing the pain in almost every case to a minimum, and often cause a resolution without a fistula. The systemic treatment consists in the administration of chloride of ammonium, a teaspoon level full to a glass of water, and out of that a tablespoonful every two hours until the face becomes flushed. It is a refrigerant and powerful resolvent and alterative. Iodide of potassium in doses of five to fifteen grains three times a day is also a valuable remedy, it being likewise a powerful resolvent and alterative. I use it especially in cases where there is a great deal of pus. In cases of simple pericemental inflammation, fluid extract of veratrum viride, a drop every hour until seven drops are taken, will prove valuable. Internal remedies are a powerful aid in these affections, and their use and administration should be carefully studied. I hardly if ever treat a case but that I use internal remedies, and consider them of as much importance as local remedies.—DR. A. RETTER in *Cosmos*.

MOUTH-MIRRORS.—DR. WAITT showed his home method of making mouth-mirrors. A die of tool steel seven-eighths of an inch in diameter and three inches long, and a counter-die of lead respectively three-fourths of an inch, one inch, and one and one-half inches in thickness are used. The counter-dies are made by building sand about the base of a tumbler to the height of their thickness, then withdrawing the tumbler, and placing in the center of the mold the steel core. Lead is then poured into the mold and around the steel. This gives a counter-die with a hole through it the size of the mirror back, and through which the circular disks of brass are drawn, thus forming the back. The wire for fastening to the backs is No. 12 size, and for the ferrule No. 2 B. and S. The ferrule is turned from the end of a piece of No. 2 wire, and drilled so as to slip on to the No. 12 wire and then soldered, and also to the back of the frame. The handles may be turned from any fancy wood and to any desired

shape. The mirror-glass is German plate, waterproof back, and may be purchased at any mirror manufacturer's. It is cut into disks one-sixteenth of an inch larger than the frame, and is ground to fit with the S. S. White finest grade corundum stone. He gets the disks of glass cut at a steam-gauge manufactory, on a machine used for cutting the glass faces. The cost complete of these mirrors when once the materials are ready is about seventeen cents apiece, including the plating.—*Cosmos Report 1st Dist. So. N. Y.*

PATENTS.—The "Dental Protective Association" has been organized to protect its members against invalid patents now existing; but, why may not its usefulness be so extended as to protect from valid patents yet to be?

How? Let me suggest:

1st. Let the Association open books, so that any dentist originating any idea, wrinkle or method that he will give to the profession, by sending a full description and model, if need be, he shall have full credit, and all the honor; and the same be so filed and recorded as to secure against any piracy or future patent.

2d. Let the officers of the Association be empowered to purchase for a reasonable sum, any important invention pertaining to dentistry, and patent the same for the use of the Association (which should mean the whole profession.)

3d. Reasonable and proper arrangements to be made with first-class manufacturers to make and furnish at reasonable prices to whomsoever will buy, anything so patented or given.

4th. Each member to pay a yearly due to meet all expenses, and receive an annual list that shall describe and illustrate every improvement so received during the year, with full credit to the originator.

Any other, or further suggestions are now in order.—**DR. J. S. ROUNCE** in *Archives*.

PYORRHEA ALVEOLARIS.—**DR. WM. CONRAD**, St. Louis, concludes a paper, read before the So. Ill. Society, as follows:

1st. Bring the patient to understand the importance of properly cleansing the teeth and gums; and to do this, brush the teeth yourself, if necessary.

2d. Remove all the deposits from the crowns at the first sittings, and as much from the roots as possible, without too

great irritation; treat the gums and process at the same sitting, to bring about healthy action, continuing the treatment for as many sittings and as frequently as, in your judgment, the case demands.

3d. If you find any teeth aching, with live pulps, devitalize. If pulpless, whether painful or not, commence to treat the roots preparatory to filling, always making a liberal opening into the pulp chamber.

4th. Fix the teeth in a secure position by firmly banding them together and securing the affected teeth to firm ones.

5th. Be careful not to irritate by too frequent medication, or by too vigorous mechanical efforts to remove foreign matter from the teeth or roots. The process, or gums, need no surgical interference.

6th. Do not make too many promises. Do not abuse other dentists for not having succeeded in any given case, as you may be unsuccessful yourself. Secure your fee—and make it large enough; this alone may help to inspire the patient with a desire to keep the mouth and teeth clean and healthy.—*Archives*.

CONTOURING WITHOUT THE AID OF A MATRIX.—DR. J. E. WAITT presented a varied and instructive clinic. He placed a gold filling in the mesial surface of the second right superior bicuspid, to demonstrate his method of rapid contour filling *without* the aid of a matrix. In preparing the cavity no retaining-points are made, but a fine groove is cut entirely around the walls, including the cervical portion. The crown portion is dovetailed somewhat, to prevent the filling from being thrown out by mastication. In the preparation of the foil lies the secret of the work. The doctor uses foil made by the Boston Dental Manufacturing Company, put up in ropes Nos. $\frac{1}{4}$ and $\frac{1}{2}$, from which he makes cylinders by folding it upon itself with the foil carriers, of such size when rolled that three of them will cover the cervical wall when placed in position. The cylinder is then squared by being pressed between the blades of the foil-carriers, thereby partly condensing it. The length of the cylinder is to be a little more than the depth of the cavity antero-posteriorly, so as to allow of being condensed endwise, thereby giving the contour. After each layer is put in position and thoroughly condensed, it is locked in place with the Boston Company's No. 4 Soft Crystalline

Gold, single thickness, made cohesive by slightly heating. Being used in this manner it is thoroughly united with the soft gold by mechanical force. When the first layer is finished and locked, he proceeds with the second, third, and, if necessary, the fourth. After the locking of each layer it is burnished until the contour is as needed, and all surplus foil worked off. The cutting surface may be finished in the usual manner with cohesive foil and mallet. A filling inserted in this manner practically needs no disk or file work upon it, as it is completely finished as the work progresses.—*Cosmos Report 1st Dist. So. N. Y.*

DENTAL HYGIENE.—* * * Whereas we have learned, to a great degree of perfection, how to deal with all sorts of conditions of caries, exostosis and other tooth diseases when they are brought to our notice, there is a great field of knowledge not nearly so thoroughly explored, namely, how to deal with the conditions that predispose to such catastrophes, how to advise our patients as to their mode of life, so that they themselves may best avoid the dangers that surround them, and how, if their lot has relegated to them the forming of the habits of the next generation, they may best acquit themselves of the task. We all know that from the earliest infancy, when the permanent teeth are being formed, their future strength or weakness is being decided forever, for whatever the exciting causes may be, the predisposing causes are really the first causes. If we could so regulate the diet of the mother and of newly-born infants that the greatest possible amount of lime salt were supplied in the most assimilatable form, we should be doing more to stamp out dental caries than by any amount of clever inventions to counteract its ravages. We all know that the initial periods of menstruation and the commencement of pregnancy are especially destructive to the dental tissues, and by modifying the mischievous tendencies of these periods, we should confer a great blessing upon mankind. We live in an age when the utmost science is expended in producing food stuffs suitable to all these contingencies; and it is a part—a very great part—of our business to know the value and applicability of each. We ought to be fully prepared to pronounce on the right dietary for the pregnant mother, the adolescent girl and the newly-born infant, with authority and with common sense. Experimental chemistry is being ransacked every day to find solutions to these problems; it is our part to be

abreast of the times and to be able to advise on all these points. Sensible advice upon such matters may do more good than the most skillful struggles to deal with the mischief when it has once occurred—struggles that too often partake of the nature of shutting the stable door after the horse has escaped.

But while by judicious treatment we endeavor to preserve the health of our patients, we must not forget our own, and we hope on a future occasion to inflict some generalizations upon this subject also on our patient readers.—*From Editorial in Jour. Brit. Dent. Asso.*

SOCIETIES.

Mississippi Valley Dental Society meets annually at Cincinnati. Next meeting on First Wednesday in March, 1890.

Vermont State Dental Society meets annually. Next meeting at Bellow's Falls, March 19, 1890.

Books and Pamphlets.

A PRACTICAL TREATISE ON CROWN AND BRIDGE-WORK, by Dr. GEO. EVANS. Second Edition. Revised and Enlarged. Philadelphia, Pa.: S. S. White Dental Mfg. Co. 1889. Price, cloth \$3.00.

That the first large edition of this work, which appeared only about a year ago, was entirely exhausted sometime before a second edition could be revised and printed shows the demand for and value of the work. The second edition contains considerable new reading matter and has been brought up to the present time by the incorporation of all the new and worthy ideas bearing upon this subject that have been given to the dental profession through the various sources. The present work contains 291 pages of practical reading matter, and 547 illustrations which add much to the value of the book. All the different systems are fully described in a clear and comprehensive style. In brief, this work is the best treatise there is on this subject, and we advise all dentists who are not already in possession of a copy to secure one as it is a work every progressive dentist should have.

THE 8th yearly issue of the "International Medical Annual" (for 1890) is announced for early delivery. The Prospectus gives promise of excellencies surpassing all former editions. Its thirty-seven editors in the several departments are to give a summary of New Remedies alphabetically arranged, also a resume of New Treatment in Dictionary form; with references to the Medical literature of the world pertaining to the year's progress of Medicine. Such a practical and helpful volume is of inestimable value to the medical profession. In one volume of about 600 octavo pages; price, \$2.75, post free. E. B. TREAT, Publisher, 5 Cooper Union, New York.

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Contributions.

“A word fitly spoken is like apples of gold.”—SOLOMON.

THE TREATMENT OF PULPLESS TEETH.

BY D. CORMACK.

THE treatment of pulpless teeth forms so great a part of our daily work that a paper on that subject cannot fail to be of interest.

I shall touch upon the treatment of exposed pulp, for although a longer paper might be written upon that subject alone, yet it approaches the theme of this paper so closely, that I cannot entirely exclude it.

DEATH OF THE PULP.

Pulps may die from a variety of causes, but the most common cause of all is the irritation caused by thermal changes on exposed or nearly exposed pulps. Blows, such as are received in fights, or falls, are responsible for the death of a good many pulps. Occasionally we find teeth untouched by decay which have dead pulps, the pulps having died without having caused any trouble to the patient, until the formation of alveolar abscess, but forgotten violence may be the cause. I may here remind

you that the knocking of a child's head against its mother's or its nurse's front teeth is not an infrequent cause of the death of pulps.

I need hardly include in this list such pulps as we ourselves destroy by means of escharotics.

The teeth in which pulps have died from natural causes are found to be in a very foul and disgusting condition, the canals generally contain portions of dentinal pulp, and are themselves saturated with septic fluid. If any septic matter be allowed to remain in a canal after the filling of a tooth, it will generate gas which will make its escape through the apical foramen, and the periostium will become so much inflamed that, if measures be not taken to ensure its relief, alveolar abscess will result.

It will, therefore, be seen how important it is that all canals should be entirely freed from septic matter.

ENLARGEMENT.

This is best accomplished by first thoroughly opening out the pulp chamber, so that free access may be obtained to all the canals.

Hern's burs should be used for imparting wide funnel-shaped openings to the canals; after this, a Gates-Gliddon drill should be passed into the canals for the purpose of removing the softened tissue from the more contracted parts of the canals.

Some operators are opposed to enlargement on the ground that great danger is run of either perforating the canal walls, or of forcing septic matter through the apical foramen.

The first objection is not an invalid one, for if care be not exercised roots may be perforated. This accident has twice happened to me, and I have met with a few cases amongst the students. Should the perforation take place in the vicinity of the pulp chamber, the wall may be repaired with gutta-percha, but generally roots are perforated in the more inaccessible parts, and then extraction is the only course left to the operator.

The danger of forcing septic matter through the apical foramen, is, I think, an imaginary one, for I do not see how it can be possible, except in the teeth of very young patients, and such teeth had better be extracted.

On the other hand, if the canals be enlarged, the antiseptics employed will have free access to all parts of them, and at the

same time the most troublesome part of the work is done away with. Again, softened tissue may be removed in less time than would be occupied in rendering them aseptic.

In treating pulpless teeth, care should be taken not to overlook any supernumerary canals, for if one be left in a septic condition, serious trouble may ensue.

ABNORMALITIES.

Supernumerary roots occur most frequently in molars of the lower jaw, but they also occur in other teeth, notably wisdoms. Bifurcated canines are sometimes met with, and very rarely, bicuspid with their roots.

The anterior roots of first lower molars are always pointing forwards, and have dumb-bell shaped canals.

It will seldom be advisable to attempt to save pulpless wisdom teeth, for these are generally so inaccessible, and the number of their canals so uncertain, that there is little prospect of any result but failure.

Some wisdom teeth, however, may be made to do good service for many years, but these do not occur in many English mouths.

Upper first bicuspid sometimes are very troublesome, but if a Donaldson's bristle cannot be introduced into the small roots there is little fear of an unfavorable result.

ACCIDENTS.

Gates-Gliddon drills are sometimes broken into the upper ends of root canals, and their removal is a matter of considerable difficulty. Mr. George Seymour inserted a pair of forceps for removing broken drills from roots, but I think that they are inapplicable except in a few favorable cases.

I have several times failed to remove portions of drills from roots, and filled the canals in the usual way, regardless of their presence. The portions thus left in, do not, I think, act prejudicially to the success of the operations, and they certainly form a root-filling the density of which cannot be surpassed.

I think that a drill will not break in a root unless its head has become imbedded in *hard* dentine, and this probably explains why we so seldom have trouble from a tooth in which a drill has been broken.

Broken drills may sometimes be removed by drilling away the dentine from the impacted portions, but such operations are extremely dangerous, and should be discouraged.

ANTISEPTICS.

After the canal walls have been entirely freed from softened dentine, the use of antiseptics should be commenced; those generally employed being iodoform, and oil of eucalyptus. They are generally applied by moistening a few fibres of cotton wool, which have been previously wound round a smooth broach, then dipping the broach, with the wool still round it, into iodoform, and then carrying the whole into one of the canals, the broach only being removed. The other canals should be dressed in the same manner, and the cavity sealed with gutta percha. After the dressings have been allowed to remain in a tooth for a week, they should be removed, and fresh ones applied, the cavity being sealed with gutta percha as before. This is a very good method, and it is the one adopted by the majority of conservative dentists, but it is found in practice to take too long, three weeks usually being spent over a single tooth.

Many dentists do not hesitate to extract pulpless teeth that may be causing pain, because they have not the time necessary for their salvation. Other dentists are very willing to undertake the treatment of such teeth, but their patients cannot afford the time. This might be avoided if a more ready method were adopted.

IMMEDIATE ROOT-FILLING.

Although a practice cannot be conducted successfully if only one method be known to the operator, yet I think that the immediate method will generally be found more effective than the method I have just described. Not only may a tooth be treated and permanently filled in less than an hour, but also the teeth on this method seem to give fewer failures, provided a proper root-filling be employed.

The rubber-dam must first of all be applied, for without its use the operation cannot be efficiently carried out.

As all canals contain a large quantity of moisture, they should be well washed with absolute alcohol, that drug being carefully worked into each canal with a Donaldson's bristle.

When the alcohol has been allowed to remain in the canals

for a few minutes, it should be removed, and peroxide of hydrogen used in its stead. This should be worked into the canals in the same way as the alcohol, and many applications should be made. During the time that the peroxide of hydrogen is in the canals, the cavity will become bleached, and there will be a peculiar frothing of the liquid. Usually twenty minutes will be ample time for the tooth to be submitted to the action of the drug, but its use should not be discontinued until violent frothing has ceased.

Hot air, and hot instruments should now be applied to the canals so that the dentine may become quite dry, and capable of absorbing the drug which is next to be applied, viz., per-chloride of mercury (1-200). This must be worked into the canals in the same way as the alcohol and peroxide of hydrogen. When it has remained in the canals for a few minutes the canals should be dried with hot air, and hot instruments. If the nozzle of an air syringe be held in the flame of a spirit lamp until red-hot and be maintained in that condition while air is passing into the bulb, the heated air will be much hotter than if the nozzle were simply held near the flame of the lamp. When the dentine of the canals is quite dry, the root-filling should be gone on with.

As regards the success of immediate root-filling I may say that if the canals be thoroughly filled with a mixture of ortes, and beta-naphthol, there is nothing left that could be desired.

When I first tried this method, I tried several kinds of root-fillings without success, but Mr. E. Loyd Williams recommended the mixture that I have just mentioned, and since then, I do not think that I have had a single failure, certainly I have not extracted a tooth that I have filled with it.

EXPOSED PULP.

In cases of exposed pulp, capping will be found of service only in cases of accidental exposure, and even then it is not universally successful. The operation of extirpation of the pulp is generally a more or less painful one, and capping is often resorted to, to avoid it, but I am not sure that extirpation is not the best practice to adopt in all cases of exposure, whether accidental or otherwise.

Before attempting to extirpate a pulp, an escharotic should be applied to it to deprive it of its vitality. Arsenic is the drug which is generally used for this purpose and I have never heard

of anything that will do the work more rapidly. When arsenic is used, great care should be taken lest any of it get on to the soft tissues in the mouth, for if any should get into the mouth sloughing will be sure to result. A very small quantity of arsenic only should be applied to the pulp, and it should be securely sealed with gutta percha. Two days is the period usually allowed for the arsenic to act, but if a week be allowed the results will be more satisfactory.

It has been said that if arsenic be allowed to remain in a tooth for more than two days it will escape through the foramen in the apex. Now if a pulp to which arsenic is applied, dies from strangulation, brought on by acute congestion, blood cannot escape from the canals, and I certainly fail to see how the arsenic can be capable of going through the apical foramen by itself.

Sometimes great difficulty is experienced in devitalizing pulps, arsenic having been applied repeatedly without success. As a rule such pulps are found in the teeth of strumous patients, and when arsenic has been unsuccessfully applied, an eschar should be formed with chloride of zinc, or carbolic acid, and then removed, the wounded surface being dressed with arsenic; if on the second visit of the patient the pulp be not dead the process should be repeated.

REMOVAL OF PULP.

The instruments best suited for removing pulps are the barbed nerve extractors supplied by S. S. White Co., but Donaldson's bristles will be found very useful. After a pulp has been removed there will be a little hæmorrhage, this should be arrested, and when the canal has been dried root-filling may be gone on with.

ALVEOLAR ABSCESS.

In treating teeth that are abscessed, the knife will be found of great service in getting rid of pus, but if the knife be objected to, hot fomentations applied to the gum, and purgatives prescribed, the swelling will very rapidly subside. Dry dressings of iodoform in the canals will facilitate the reduction of the swelling.

When the gum has returned to its normal condition, the usual root treatment may be gone on with, care being taken that no septic matter be allowed to remain in the canals.

ROOT FILLINGS.

Several substances have been used for root-fillings, the principal being gold, tin, lead, gutta percha, ortes, wood, shellac, was used alone, the preparation of iodoform, and wax, introduced by the President, and a mixture of ortes, and beta naphthol, for which filling I am indebted to Mr. E. Lloyd Williams. Gold, tin, lead and shellac form perfect fillings when properly introduced, but they are very difficult to manipulate, and more difficult to remove. Wood has, I think, long since gone out of use.

Gutta-percha makes, at the time of its insertion, a good filling, but it shrinks badly, and is very absorbent; it is consequently not a desirable root-filling.

Wax, when used alone, very quickly disappears, but iodoform and wax lasts longer. I have put iodoform and wax into teeth, and on opening the teeth have found the canals empty.

Ortes when used alone hardens too quickly to be manipulated by ordinary operators. The mixture of ortes and beta naphthol does not become quite hard until it has been mixed for two or three hours, it is easy to manipulate, and is powerfully antiseptic.

The naphthol should be taken on a spatula, and dissolved in phosphoric acid, oxide of zinc should be added to form a thin paste. A drop of oil should be placed upon the back of the left hand, and a smooth Donaldson bristle passed through it, all excess of oil being removed. The bristle should now be dipped into the paste, and the walls of one of the canals smeared with it. Some fibres of cotton wool should be wrapped round a clean, smooth bristle, dipped into the paste, and pushed into the canal, the bristle being removed, and the filling in the canal thoroughly cleansed. Whenever the immediate method of root treatment is adopted, no other filling should be used.

BACTERIA.*

BY D. F. DONALDSON, M.D., PORT WILLIAM, O.

THE subject to which I shall ask your indulgent attention for a few moments, is Bacteria—their classification as to form, and as to nature, a brief description of some of the most important,

* Read at the Medical Society of Green County, Ohio.

and the relation they bear to disease in the higher forms of life. I shall not be able to go into detail, but will simply outline the subject, and leave the rest for you to recall from your own readings and observations.

More than fifty years ago the first literature on this subject was placed before the scientific world by Ehrenberg, a German physician, and he called his production "Organisms." Three years later, a Frenchman, Dujardin, published a work called *Natural History of Zoophytes*, but people were slow to accept the theories presented. A few other straggling writers attempted the subject within the next two decades, but not until the 60's did the subject assume any degree of prominence in the eyes of the scientific.

Then came Pasteur, Muller, Liebig, Tyndall, and a score of others, with ready pens, and the world began to say, "Can this thing be possible?" The investigations of Pasteur solved the problem of fermentation and putrefaction. He found the solution in micro-organisms, also that the diseases, anthrax, pyæmia, septicæmia and chicken cholera, owed their origin to a cause, alike, or near akin. This gave universal interest to the subject, and Lister, with an eye ever to the practical, began his antiseptic surgery, and stirred up, in the minds of the scientific, a desire to become more familiar with, and to know more of these minute foes, or friends of animated nature. Investigation followed investigation. The connection between bacteria and infectious diseases was shown to be intimate, and it was left for the patient, persevering Koch, to revolutionize old theories, by discovering the bacilli of tuberculosis, and of Asiatic cholera, and proving their identity beyond doubt by cultivation and inoculation. He summoned the medical profession from all parts of Germany to Berlin, and demonstrated before them the methods employed in his investigations of bacteria. He established there a bacteriological laboratory, and from that the methods of research and the means of recognizing the cholera and the tubercle bacilli, are now being widely disseminated.

The rules he works by are as follows:

1st. The micro-organism must be found in the blood, lymph, or tissue of the man or animal suffering from, or dead of the disease.

2nd. The micro-organism must be isolated from the blood,

lymph, or tissue, and cultivated in suitable media outside the body, and these pure cultivations must be carried on through successive generations of the organism.

3rd. A pure culture, thus obtained, must, when introduced into the body of a healthy animal, produce the disease in question.

4th and lastly. The same organism must again be found in inoculated animals.

I have not space in this paper to give you methods of isolation and culture, but will refer you for these to works on that subject, such as Crookshanks or Kleins, or better still, a practical course in some good laboratory.

Physiologically, bacteria may be considered as minute cells, destitute of nuclei, differing from vegetable cells by not having the property of splitting up carbonic acid into its compounds; and from animal cells by being able to derive their nitrogen from ammonia compounds.

Chemically considered, they are composed of a nitrogenous body, 84 parts; fat, 6 parts; ash, 5 parts, and undetermined substances 6 parts.

The nitrogenous body is composed of carbon, hydrogen, and nitrogen, in varying proportions.

Histologically, the cell wall is composed of cellulose. Under the action of iodine the cell contents contract and render the wall visible. In some species the walls are pliable and allow the organism a slow vermicular motion, while in others, such as the tubercle bacillus, the wall is rigid and there is no motion. The cell contents, or protoplasm, varies, in some homogeneous, in others granular; and the great difficulty now in the study of these germs, lies in the staining of the cell wall and counter staining of cell contents; for some will act under certain reagents while some will not, and it is only after many different coloring matters and reagents are used on as many different specimens of the same organism that a staining is effected.

Some germs become enveloped in a gelatinous capsule, which may be a secretion of the cell itself, or a substance derived from surrounding tissues. The capsule may surround an individual organism or a chain of them. In some, as the pneumo-coccus of Friedlander, it disappears on cultivation, but reappears on inoculation.

As to nature, bacteria are divided into two classes, patho-

genic, and non-pathogenic as to form into three classes, viz: 1st, round or cocci; 2nd, bar or long, or bacilli; 3rd, curved or spirillum. The first form, cocci, is the most numerous, they are divided into sub-classes according to their form after multiplication. If a coccus divide and the two remain attached it is called diplococcus. If this again divide and form a line of cocci it is called streptococcus, but if they arrange in rectangular form, a sarcinacoccus, but if the division or multiplication result in an irregular cluster it is called staphylococcus or micrococcus.

It is yet an unsettled question whether any of the cocci have the power of motion, or not. Reproduction is carried on by cleavage in the cocci. In other forms by cleavage and by spores—by cleavage when the substance in which the germ exists furnishes plenty of nutrition—by spores when the nutrition is meager, or altogether withdrawn. The spores seem to be invested in a double cell wall and are much harder to destroy than a full grown germ. They derive their nutrition from their surroundings by absorption. Water is essential to their growth, but desiccation is not necessarily fatal to all germs.

Like all larger forms of creation, heat, light, moisture and electricity form circumstances governing their growth. Each climatic zone has its peculiar form of bacteria, though some forms, mostly non-pathogenic, seem to pervade all zones. They are most numerous in filth, such as sewerage, night earth, and garbage dumps, and especially are places in cities where the building site has been artificially raised by dumping thereon the cleanings of the streets. The integument of the uncleanly, and his unbrushed teeth, form a regular bacterian paradise. Healthy blood and tissue contain no bacteria.

We will now consider the sub-classes of the cocci, or round form, the streptococci (chain form), number 24 pathogenic, and 4 non-pathogenic forms now known. In appearance under the microscope they are much alike, and can be distinguished only by effects and the different phases of their growth under artificial cultivation. Seven of these forms are found in the pus of abscesses, furuncles, and suppurative points; others are found in erysipelas, puerperal fever, endocarditis, diphtheria, cerebrospinal meningitis, yellow fever, and in various diseases of the lower animals and insects.

Of the sub-class known as diplococcus, the gonococcus is

most important. It occurs singly, in pairs, in tetrads, or in groups. They are found in the discharges of gonorrhœa, adhering to pus corpuscles or epithelial cells. Their pathogenic character is established beyond question. There are other cocci of this class found in the vaginal discharges and secretions, but of non-pathogenic character.

The sarcomacoccus are of 9 varieties, non-pathogenic. Staphylococci or micrococci are more numerous, 16 pathogenic forms and 18 non-pathogenic forms known. Among the pathogenic are found that of scarlet fever, subeola, pertussus, typhus, acute yellow atrophy, gangrene (in deep layer) and that found in the spinal cord of dogs dead of hydrophobia, though the descriptions of the last named differs some under the different examinations of different bacteriologists. The pneumococcus of Friedlander seems really to take no place in the classification heretofore made, but resembles most the diplococcus, as it is composed of an egg-shaped capsule containing two cocci, each occupying a separate portion of the capsule. It is, however, classed by most of authors among the bacterian, or bacilli, though the shape is elliptiform. When an artificial culture is produced in nutrient gelatin, the growth resembles a bright round-headed wire nail suspended in the media.

The second class, bacilli, form a numeroua list—pathogenic and non-pathogenic. Among the pathogenic are found the bacillus of leprosy, of syphilis, though it is yet difficult to distinguish between syphilitic and spregmatic bacilli, indeed in many cases of syphilis the bacillus seems to be not present, hence it is questionable whether it has yet been isolated.

The typhoid bacillus presents the appearance of round ended rods, often dumb-bell shape, varying in length, but usually $\frac{1}{1000000}$ of an inch. They are of a yellowish brown color and readily obtained from Peyer's patches, the spleen, mesenteric glands, and lungs of persons dead of typhoid fever. They readily grow on boiled potatoes, forming a slimy, watery spot, where the culture is located. They can exist and multiply in water unless it be in rapid motion.

There is a form called bacillus malaria, found in the tissues of persons suffering from that disease. It presents the appearance of twisted threads, and was first discovered in the soil of the Roman campagna, when the disease was epidemical in that local-

ity. More recent investigations show the disease to be due to the plasmodeum malaria, an amœboid body, having motile filaments constantly present in the blood corpuscles of malarial patients. They are not of uniform or permanent shape, or size.

The tubercle bacillus of Koch is long and slender, and may be straight or curved, and frequently presents a beaded appearance throughout. They occur singly, in pairs, or in bundles, are of slow growth under cultivation, and destitute of motility. A peculiarity of what are called plate cultures of this bacillus is that the colony is always S shaped, pointed at extremities and heaviest near the centre. The long axis of the germ corresponding with long axis of colony. Blood serum forms best media for their cultivation. They are long lived, the spores growing after being dried for 46 days. In man they can be detected in the sputum, tissues, blood and urine, but the sputum is the part mostly used for investigation. This bacillus is very hard to stain.

The bacillus anthrax, or malignant pustule, is very large. In length it may be five times the length of the diameter of a red blood corpuscle. They are from 1-5 to 1-20 as thick, as long. Looking through a glass of low power they look like a tangled mass of threads, but a higher power reveals lines that mark segmentation. They are easily cultivated and stained, and of very prolific growth, animals inoculated from them die within 48 hours thereafter. Some animals, viz., the dog, cat, pig, white rat and Algerian sheep have immunity from infection, and it is with difficulty that the Norway rat can be inoculated. The bacillus anthrax, though very dangerous to handle, is the most easily cultivated artificially, and presents the most beautiful aspect under the microscope of any that it has been our pleasure to experiment with.

Beside the streptococcus of diphtheria there is also a bacillus which is much like the tubercle bacillus, though about twice as heavy. It is found in typical cases, in the deeper layers of the false membrane, beneath the streptococcus. Under the head of bacilli come many more that are associated with disease in animals, such as fowl cholera, swine typhoid, swine erysipelas, glanders, etc.

The 30th class, spirillum, is not so numerous so far as known. There are but three species pathogenic. That of relapsing fever

(Obermeieri); Asiatic cholera (comma bacillus); cholera morbus (Frukleri). That of relapsing fever is long, with regular screw curves, and has a very rapid, undulatory movement. Found in the blood but not in the secretions, and only during the febrile state of the relapse. Inoculations in mice, rabbits, sheep and pigs, give negative results, but monkeys have not the immunity of the animals above named, and the disease is reproduced in them.

The spirillum of Asiatic cholera is curved and looks under the microscope much like the comma or apostrophe marks of punctuation. Hence the name "comma bacillus." In cultivation their line of long axis corresponds with long axis of colony. They multiply with alarming rapidity, and after many artificial cultivations the disease has been reproduced on lower animals by inoculation.

The spirillum Frukleri, or cholera morbus, much resembles that of Asiatic cholera, though thicker and heavier; and when cultivated in a test tube of gelatin, they soon liquefy the gelatin and present the appearance of the finger of an old glove hanging in the medie. They are very easily cultivated and show rapid growth. While working with this germ in the laboratory last winter, two careless students contracted the disease and had a serious attack on the following day. It was their last work in the laboratory, their experience with Frukleri had been so unpleasant that they choose rather to leave anthrax, cholera, and typhoid alone.

I have now given you a very meager description of some of the most important of germ species. How they act on the system seems to be under some controversy, but it is generally believed that germs require certain soil, as I may call it, for their growth, and they find this soil, whether it be in the body or not, and utilize it. Here growth and multiplication take place. These places of fertility are reached through the alimentary canal, air passages, exposed mucous membrane, integumentary pores, and open wounds. When these germs find situation they act as an irritant and destroy tissue, and rob the tissues of oxygen. They are carried by the fluids of the body to other localities and new colonies started, and so on till all parts suitable to their growth are taken up. The old germs die and decay, leaving poisonous alkaloids, called ptomaines, and it is from these ptomaines that

disease is generally believed to have its origin, by advocates of the "germ theory." In other words, these ptomaines produce septic poisoning which varies in effect as the ptomanic dose be small or great.

To combat these destroyers, two means are used, viz., antiseptics and disinfectants, the former act by retarding growth, the latter by destroying vitality. Excessive heat, 105° C. for germs and 140° C. for spores is a disinfectant. Excessive cold for most germs is only antiseptic, but some even yield to the first frost, like the yellow fever germ.

Chemical disinfectants may be so diluted as to render them only antiseptic, but antiseptics cannot be so concentrated as to become disinfectants. To destroy these germs outside the body is easy enough, but when in the body, the means used for their destruction outside the body, would be just as fatal to host as to guest. Koch has stated that to check the growth of anthrax bacillus in man it would be necessary that 12 grammes of iodine be constantly in circulation, and that the dose of quinine necessary to destroy the spirilli of relapsing fever, would be from 12 to 16 grammes. The use of disinfectants largely diluted, to retard the growth and fortifying the system by furnishing plenty of nutrition, seems, from what is now known, to be the best way of treating these diseases. There must be more investigation, more tedious laboratory work. Each germ must be thoroughly understood, its habits, its nature, its meat and its poison. Its likes and dislikes must be sought after. Take pure cultures of some well known germ and ascertain by experiment the smallest amount of diluted disinfectant that will check growth and multiplication, and the length of time required to render the germ inert through its application, and compare the amount of the drug employed with therapeutic dose of same drug to man.

But, gentlemen, the field is open to all of us. Koch has immortalized himself by discovering the cause. Who will share his glory by discovering an antidote for the effect?

SOME POINTS IN THE ETIOLOGY, DIAGNOSIS AND TREATMENT OF EMPYEMA OF THE ANTRUM.

BY FELIX SEMON, M.D., F.R.C.P.

(Concluded from page 73.)

I finally come to the question of treatment.

Up to the beginning of 1886 three methods were used :

(1) Simple drainage through the natural opening.

(2) Opening of the antrum through an alveolus (Cooper's method.)

(3) Opening of the antrum through the fossa canina (method of Desault-Kuster.)

In 1886, almost simultaneously with Ziem's first publication, Mikulicz, then of Krakau, now of Konigsberg, recommended opening the antrum through the lower meatus with a specially constructed stiletto, and shortly afterwards Krause introduced, instead of the latter, the trocar above referred to. Of these four methods the drainage through the natural opening has found but few adherents and given not very encouraging results. This is easily intelligible, from the previously mentioned difficulty of introducing catheters, etc., into the hiatus, and also from the fact that the opening is situated so high above the floor of the cavity. Free drainage therefore, is difficult under all circumstances, and the treatment can hardly be carried out by the patient himself, even if in accordance with Bayer's proposal, the ostium should have previously been enlarged by means of the galvano-cautery or otherwise.

Also the last-named method, the opening from the fossa canina, has met with but little favor, though Christopher Heath and Morton Smale have had good results with it, whilst quite recently Schech has stated that, especially in very obstinate cases, which resisted all other forms of treatment, he has finally obtained a cure by drilling a comparatively large opening through the fossa canina into the antrum, and plugging the cavity with iodoform gauze.

The real battle, however, has been and is being fought ever since 1886 between the method of opening the antrum through

an alveolus and that of opening it from the lower meatus. The opinions as to the preference of each of those methods are just as curiously divided as those on the etiology and on the best mode of diagnosing the disease. Whilst Mikulicz, B. Frankel, Krause, Friedlander, Bronner and Schiffers prefer the route through the nose, Christopher Heath, Ziem, Schmiegelow, Krieg, Fletcher Ingals, Bayer, Heryng, Greville Macdonald, Scheck prefer the alveolar operation, and Moritz Schmidt has returned to it, because his patients often found it difficult or impossible to carry out the after-treatment.

At the present moment the contest is as fierce as ever. The adherents of the alveolar method claim for it (1) that in many cases, in order to get rid of the *fons et origo mali*, the extraction of one or several carious teeth is *ipso facto* necessary, and that it is, therefore, natural that the simple act of perforating through the alveolus should at once be added to the removal; (2) that the opening thus produced corresponds to the most *dependent* part of the cavity, and that the drainage, therefore, will be most perfect; (3) that the patient can easily carry out the after-treatment himself. The opponents, on the other hand (*e.g.*, Friedlander), argue (1) that often a healthy tooth had to be drawn; (2) that the constant running of pus into the mouth was a source of great annoyance to the patient; (3) that by creating and keeping open a communication between antrum and mouth, the entrance of particles of food and of pathogenic micro-organisms of the oral cavity into the antrum was facilitated and the suppuration in the latter actually kept up.

To my mind the arguments of the adherents are not counter-balanced by those of the opponents of the method. I can only state that I have never seen suppuration of the antrum co-exist with a perfectly healthy set of teeth, and that, though I do not in the least doubt its occasional occurrence, I am convinced it does not occur "often." That in the rare cases in which the teeth are found healthy the operation from the nose, if practicable, may be preferable, I will not for a moment contest; but I fail to see why the exception should be made the base of the attack against the more natural method in the majority of cases.

With regard to the second objection, viz., that the running of pus into the mouth was a source of great annoyance to the patient, I must say that I have never heard that complaint from

any of my patients who have been operated upon by the alveolar method, and I do not think that there is so much difference between a constant annoyance to the gustatory and the olfactory nerves that this could much influence one's decision; for it must not be left out of consideration that if the discharge runs into the nose instead of into the mouth, the patient will continue to suffer from the trouble for which he has consulted the practitioner, viz., the unpleasant odor, so long as the discharge is foetid, in addition to having to use his handkerchief almost constantly.

The third objection, viz., that by the establishment of a communication between antrum and oral cavity, food and micro-organisms penetrated from the latter into the former and kept up the suppurative process, would certainly weigh very heavily with me, if it could be only shown (1) that this really occurs, (2) that the operation from the nose is *superior* to that from the mouth in that the suppuration sooner ceases and the after-treatment is curtailed. For it cannot be denied that the long duration of the after-treatment is the weakest point in our present system. Though occasionally the suppuration ceases a few weeks after the operation, especially in comparatively recent cases, under the use of mild, tepid, antiseptic and disinfectant solutions (carbolic acid, borax, iodine, salt, permanganate of potash, etc.), by means of Christopher Heath's apparatus, yet there are, unfortunately, other cases, in which the suppuration, in spite of free drainage from the mouth through the antrum and the nose, continues for many months. Here certainly an improvement would be *most* desirable.

But what I fail to see is (1) that it has actually been shown that micro-organisms, etc., enter the antrum when the opening is properly made, when a suitable canula is inserted and when its lower opening is closed at meal times, and (2) that when the antrum is opened through the nose the after treatment is remarkably shorter. In the same paper in which Friedlander attacks the alveolar method, he confesses, in pleading for the nasal operation, that "further observations have shown that a true cure of the disease could only be obtained in rare, more favorable and more recent cases." This, surely, shows no superiority of the nasal over the alveolar method! Friedlander finds the cause of the failure apparently in the irritation of the mucous membrane of the antrum, caused by the frequent injections of *fluids*, and

reports that the results have been much more satisfactory, since these injections have been replaced, after *one* thorough injection of water and cleaning of the cavity from pus, by insufflations of iodoform. I think myself that this would be an important progress, if further observations should corroborate Friedlander's statement; but it need not be said that the *dry* method could just as well be employed from an opening made through an alveolus.

To avoid all misunderstandings I beg to say distinctly that I personally have no theoretical objections to the nasal operations as such, and that very possibly my present views may be changed some day; but if one hears from trustworthy observers that sometimes considerable hemorrhage is caused by them, that comparatively often, in consequence of narrowness of the passages or of thickness of the nasal bones, their performance is difficult or even impossible, that many patients have considerable difficulty in carrying out the after-treatment, etc., one is the less inclined to give up a tried method in their favor, if one remembers that in the majority of cases defective teeth have to be extracted in order to remove the source of the whole trouble, and that thus the first and most severe act of the alveolar operation has anyhow to be performed.

The near future will probably teach us more precise indications for the selection of the best method in each individual case. I have, so far, been satisfied enough with the results of the alveolar operation. One point regarding treatment in which further improvement would be most urgently desirable is, as mentioned before, curtailment of the after-treatment. In very obstinate cases in which, in spite of long continued fluid or dry antiseptic injections through an alveolus no cure results, I shall in future probably only establish a large opening above the canine tooth, and plug the cavity with iodoform gauze, as suggested by Schech, or make an additional opening in the lower meatus of the nose, as recently proposed by Michelson and Mikulicz.

I should have liked to enter in greater detail upon a good many points which I have barely touched upon, but my paper has, I fear, already attained an excessive length. It will have served its purpose if it has succeed in drawing attention to some of the most contested points in the etiology, diagnosis and treatment of empyema of the antrum, and in possibly indirectly assisting in paving the way for improvements in these respects.

TOOTH EXTRACTION AND ITS ALTERNATIVES FOR
THE RELIEF OF PAIN.

BY H. C. QUINBY L.D.S.I.

THE following remarks are intended as an earnest remonstrance against the practice of extracting teeth for the mere relief from pain, a practice which those country surgeons who are, by reason of distance from special dental aid, compelled to pay attention to the teeth of their patients seem to think is the only possible form of treatment, and therefore perfectly justifiable. I am aware that many who call themselves dentists are guilty of a still more extravagant waste of human teeth; often, I fear, prompted by a motive of self-interest, which ought to be a sufficient reason for striking their names off the register; but, while an appeal to these men—if, indeed, any appeal would influence them—would be more in place in the pages of the dental journals, those special journals do not, as a rule, come into the hands of general practitioners in medicine and surgery, and no country surgeon can do without his *LANCET*. I constantly hear of cases like this. “I got toothache while I was staying at such or such a place, and, as there was no dentist near, I went to the doctor, and he took the tooth out.” There is never any mention of an effort to save the tooth, and in these days, when surgery is making such rapid advancement in every direction, it is time that such empiricism should come to an end. I doubt if there is any other organ possessing a tithe of the functional importance to the maintenance of human health and strength that rightfully belongs to a grinding tooth which would not receive far more consideration if it were a source of pain than any surgeon ever thinks of giving to a tooth.

When a tooth aches, the first suggestion is to have it out. But I do not hesitate to say, after many years of experience, that it is never necessary to extract a tooth merely for the relief of pain. That there may be, and are, many other reasons of sufficient importance to justify extraction I of course admit, and these should have proper consideration in cases of toothache; but what I mean to say is simply this: there are two forms of pain

arising from teeth, which will include at least 90 per cent. of all the cases that will come to a dentist in good practice; we will call these primary and secondary toothache, and I contend that in neither of these is extraction ever the remedy to be chosen without careful deliberation.

Primary toothache is congestion of the tooth pulp; the unyielding walls of the pulp cavity permitting no expansion, there is intense pressure on the nerve tissue, and consequent pain, which finally terminates by strangulation of the pulp. This is true toothache, arising in the tooth, but it may be felt in the terminals of any of the branches of the fifth nerve, on the corresponding side of the face, and is rarely felt in the tooth where it originates, unless there is suppuration in the pulp, in which case the peridental membrane will be affected. It will be obvious that many cases of so-called neuralgia in the face are simply toothache, and a careful search will generally reveal the offender, but there will be no occasion of extraction. To complete the operation the pulp must be removed from the root canals, and these filled to the apex; but this will call for special skill, and no harm will be done if there should be three or four weeks of delay. Nothing in a dentist's experience is more melancholy than to look into a mouth and see five or six grinding teeth without an antagonizing tooth in the opposite jaw.

The secondary form of toothache is usually admitted by the sufferer so be toothache, because the pain appears to be intensified by occlusion with an opposite tooth and by pressure of any kind. In reality the pain is caused by gangrene of the pulp, and I am quite aware that this is considered so serious a matter that most surgeons would order immediate extraction, but it is not at all a necessity. It is a matter of every-day practice with me and with thousands of other dentists to treat alveolar abscess successfully and make the teeth useful and comfortable. There are failures of course, as in everything else, but they are not more than one in ten, and of these half at least are failures only so far as this, that the abscess has established a sinus, and that for some time after the tooth has been filled there is an occasional discharge of pus from this sinus; but the cause of the diseased condition is removed, there is little if any pain, and the discharge ceases after a time. The first treatment is a very simple matter. Percussion indicates a diseased condition outside the

tooth—that is, in the peridental membrane, and the cause is a decomposing pulp or some other putrescent matter in the pulp cavity. The tooth is generally decayed, so that a very slight excavation will open the pulp cavity and give vent to the poisonous gases and pus which are confined there, and when these find an outlet the pain ceases. Recognizing the fact that alveolar abscess does not, and cannot, arise from a tooth which has a healthy pulp, it is obvious that an opening into the pulp cavity will be a painless operation, which, of course, extraction would not be, nor will extraction give relief so quickly as the simple treatment I have suggested. I do not mean to say that the soreness which was felt on pressure will immediately disappear; it will take time for that; but the intensity of the pain will be mitigated, the contents of the abscess will be evacuated through the roots of the tooth, and very quickly the tooth will be in a condition for further treatment, which will in most cases result in a radical cure of the tendency to abscess, and the tooth will be made useful and comfortable. The course of treatment is a series of antiseptic dressings in the roots to cleanse them from all putrescent matter, and then, as in the other case, filling them to the apex, for while abscess is first caused by toxic matter from the decomposing pulp, it is maintained and renewed by the filling up of the pulp cavity with pus and lymph, which in their turn pass through the same process of decomposition. This root treatment, however, is not available in temporary teeth after the sixth year, as the process of absorption which is going on in the roots of these teeth will have so widened the apical foramina that a solid filling cannot be made, and is therefore worse than useless; but it is better to open the pulp cavity freely and leave it open, so as to allow free evacuation into the mouth and allow the tooth to decay gradually, as it will of course do, until nothing but the roots remain, than to deprive the child of a masticator at once.

The child needs masticators quite as much as the adult; but more than this, I am certain that it is almost an impossibility to extract the temporary molar when it is in anything like full development without more or less displacement of the partially developed bicuspid which lies between the roots of the temporary molar. I am well aware that it has been said over and over again by writers who are recognized as authorities that the development of the alveolus of the bicuspids does not depend on

the retention of the temporary teeth ; but what does that matter if the partially calcified crown of the bicuspid is so displaced that the further development goes on with the tooth in a transverse or a horizontal position ? I have in my possession models of the upper and lower jaws of a boy of ten years and a half of age, whose temporary molars and two canines were all taken out while in almost perfect development, and the gums are shrunken like those of an old man, with not the slightest indication of a bicuspid appearing for the next five years. I often see cases where some of the temporary molars have been removed, but I confess I do not often see cases of such wholesale premature extraction.

Alveolar abscess may arise from a putrescent pulp in a tooth which is not decayed at all, but which has some time been displaced by accident so as to sever the nerve and blood-vessels at the apical foramen. This happens, especially with front teeth, from a fall, from a blow, from many chances in athletic games ; and often enough the tooth may be comfortable for months after the accident, so that no one thinks of connecting the present pain with what happened so long ago, but by drilling into the pulp cavity the poisonous gases and pus are evacuated, and the tooth can be made as useful as the others. In all cases after a front tooth has been loosened by an accident it should be watched carefully for a few months to see if any change of colour takes place, and if so the pulp cavity should be opened at once.

Pyorrhœa alveolaris may cause something very like alveolar abscess, and yet the pulp of the tooth will retain its vitality ; but in this case the disease commences at the neck of the tooth and proceeds towards the apex of the root, which is exactly the reverse of what happens when there is a putrescent pulp. In these cases, although relief will be given by a thorough cleansing of the root, by scraping, and by one or two applications of aromatic sulphuric acid, followed by soothing dressings, there is little chance of saving the tooth for more than a year or two.

In this paper I have only meant to indicate that there are means of relieving the ordinary forms of toothache, which will be far more merciful than extraction, to the patient, and which are so simple that any surgeon can make use of them, and at least, if he cannot complete the operation, he will have relieved present suffering, and left the tooth to be treated by hands which have

had more practice. But I do not by any means pretend to have exhausted the subject, or to have presented anything which will be new to dentists. I am told that surgeons do not learn these things from their text-books, and I hope to have shown them that there is something more interesting about teeth than extracting them.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

THE TEACHING OF PROSTHETIC DENTISTRY.

BY PROF. L. P. HASKELL, CHICAGO.

THERE is no more important branch of dental science than that of Prosthetics, and requiring more time for its instruction, than the Operative department. It is a well recognized fact that it requires more skill to make a successful denture than to fill a difficult cavity.

But there is imperative need of an entire change of method of instruction in this department.

The following are some of the reasons for a change:

It covers a much broader field than any other department. There is too much of didactic and far too little of technical teaching. More time consequently should be devoted to it, even at a sacrifice of a portion of some other study, be it anatomy, chemistry, or what not. There should be more attention paid to metal work and less to rubber. The classes should be smaller or more demonstrators provided, or, as I will state further on, a more radical change still.

I have long realized the necessity for this change, but it has been greatly emphasized by the number of letters of inquiry in regard to the Post Graduate School from graduates of the various colleges, who complain of the inadequate instruction they have received in this department. These complaints do not come from the class of students in colleges who avoided as far as possible the laboratory while in college, but from those who were anxious to learn as much as possible.

Prosthetic Dentistry *cannot* be learned in the lecture room, and were less of the student's valuable time spent there listening to talks about the "expansion of plaster," and other equally unimportant matters, and long descriptions of methods that can be made intelligible *only* by the clinic, there would be great gain in time to his advantage.

Then he spends a great deal of time pouring over a text-book, where is given such a variety of methods that he is bewildered, knowing not which to choose.

I claim that the lecturer should have a well defined theory and method of his own. He should be able to condense this theory into the smallest possible amount of words. He should be able to go into the laboratory and fully demonstrate his methods. For this purpose he should receive a salary that would enable him to devote the time necessary to fully accomplish this object. He should have competent demonstrators who are familiar with *his* methods. It is often the case that the demonstrator's methods are not in accord with the lecturer's, and it is often the case that the demonstrator is a recent graduate with little or no experience.

When the lecturer thus becomes a demonstrator he should not sit down and simply answer the questions that are asked him, but should go from student to student and see *how* they are doing, and if not doing right take the case in hand and show them, at the same time giving reasons why it should be done so and so.

The *large classes* are unfortunate for the student who is anxious to learn. Five hundred students can listen to a lecture as well as one, but in the laboratory the chances of twenty-five are far better than a hundred.

In order to secure more practical work in metal plates, a large portion of the partial sets should be made of *silver* (use pure silver alloyed with platina). The cost is but a trifle more than rubber. By this means the student's experience in swaging, fitting, adjusting clasps, grinding on in some cases gum-teeth, investing, backing and soldering, is greatly increased. Full plates can be made on aluminum instead of rubber. When this is done the professor can with better grace and truthfulness sign the diploma which announces that the graduate is qualified to *practice* dentistry.

COUNTRY *vs.* CITY DENTISTS.

BY E. H. RAFFENSPERGER, D. D. S., MARION, OHIO.

THE question has often been asked me, why is it "that the city dentists do so much better artificial denture work than the country dentists?" While this ought not to be the case, in many instances it is, and the reasons I think are obvious, as I shall endeavor to show.

What the country dentist lacks is that most important adjunct to our profession, the dental depot. He is supposed to keep his own dental depot, but sometimes it is rather limited, a dozen or two sets of teeth comprising the whole stock in trade, and this little stock is called upon to supply the wants of any of the numerous cases presenting themselves, when probably not a single set in the lot is adapted to the case in hand. This is kept up until the stock in trade is exhausted and a new one ordered.

In the city, where the dentist has access to the large stock of artificial teeth kept at the depots, it is no wonder his work excels—here can be found just what is wanted. The average country dentist cannot afford to keep a very large assortment of teeth on hand. So to help him out of his difficulties the S. S. White Dental Manufacturing Company has recently issued a large catalogue containing cuts of every tooth they make. Every cut is numbered, and shows exactly the shape, size, etc., of the tooth it is supposed to represent. With this book before us, and a pair of "dividers," to measure with, we can select teeth for any particular case, right in our offices, just as well as if we went to the dental depot. By saving all the old broken teeth and gums, we can easily find a piece to match the shade we want, and by sending this, together with the number and style of the tooth or teeth we desire, as marked in the catalogue, we can order something that will exactly suit the case we have in hand.

The catalogue also gives some very valuable information pertaining to the anatomical arrangement of the teeth.

Prosthetic dentistry can hardly expect a boom so long as the country dentists allow their patients to select teeth for themselves. This is done by many. After taking the impression a box of

teeth is handed to the patient, and he is told to "pick out" what he wants, and if the patient be an old sallow woman, nine times out of ten she will select the whitest and smallest teeth in the box, and in a few days will be wearing the same teeth, much to the surprise and disgust of her friends.

Some dentists seem to think the main feature, or rather most important item, in making an artificial denture, consists in producing a high polish on the plate, indeed I have heard dentists criticise artificial teeth that were perfect in every respect, simply because the palatine surface of the plate was not polished like a mirror. More time spent in the study of facial expression and anatomical arrangement, and less time spent in polishing the plate, will help matters wonderfully.

In conclusion will add, that with all the facilities and advantages we have offered us, to help us perform better work, if we do not avail ourselves of them, we have no excuse to offer that we have not the advantages of our more fortunate city brothers, and if our work does not come up to the standard of theirs, we have only ourselves to blame.

A NEW METHOD OF CROWN AND BRIDGE-WORK.

BY MESSRS. JONES AND LENNOX.

THE following method of constructing and inserting a bridge to carry four teeth, viz., two centrals and two laterals—the lateral roots supporting the bridge—was demonstrated at the annual meeting of the association held at Brighton.

At the outset the lateral roots were prepared and a cast was taken and treated exactly as described in the first paragraph of the account of a method of crowning roots in a previous article.* Four flat teeth were then chosen of such size that, when the work was finished, adjacent teeth just touched each other at one point, the purpose of this being to prevent the junction of their backs from being visible in the mouth. These teeth were ground to the model and fitted with backs, which were kept quite short towards the gum. This may be done because the backs are not to be soldered to a plate, and there is an advantage in point of cleanliness in reducing the amount of metal as much as possible.

* See JANUARY OHIO JOURNAL, 1890.

The centrals were then permanently riveted to their backs. A second back was next prepared for each lateral, and these were made of the usual shape. The two backs of each lateral were then temporarily secured to it by slightly bending the pins, and bands were prepared and fitted to them and to the roots as described in the second paragraph of the paper above quoted. A pin (or post) for each root was also prepared as there described, and soldered, in this instance, to the inner of the two backs, the same precautions being observed as to adjustment, etc. The next step was to wax the two centrals and the two laterals with their outer backs only in position, upon the model. Then the whole being carefully removed and invested in sand with a slight addition of plaster, the backs of the two centrals were soldered to their pins, to each other, and to the (outer) backs of the laterals. The work was then finished in the usual way and tried in the mouth.

In the accompanying drawings—



FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.



FIG. 5.



FIG. 6.



FIG. 7.

Fig. 1 shows a vertical section through the two root-canals, giving an inside elevation of the bridge in connection with the posts.

Fig. 2.—An outside elevation of the two centrals and the outer backs of the laterals.

Fig. 3.—A vertical section of a lateral when mounted.

Fig. 4.—A similar section of a central in contact with the gum.

Fig. 5.—A section through post, inner back and ring of a lateral before mounting.

Fig. 6.—An inside elevation of the same.

Fig. 7.—A horizontal section of the work when finished.

Up to this point the operations had been carried out in the workshop. The process of insertion was demonstrated at Brighton.

The first step was to attach the inner backs and bands of the laterals temporarily to the outer backs by means of small staples of soft wire, of the same thickness as the pins of the teeth. This was done by putting the staples in from the back and bending the outer ends. The posts were then fixed in the roots by means of white-stopping, the post on the right side of the mouth being first fixed. The staples were then removed, a small quantity of soft copper amalgam was applied to the parts of the roots in front of the backs, the lateral teeth were put in, the pins which then passed through both backs of the laterals were bent towards the gum, and the bridge thus firmly fixed in position. Finally the bands were filled up with copper amalgam and finished as described in the previous article. This completed the work.

The advantages of this method of bridging arise from the small quantity of metal used, the consequent cleanliness, lightness and smallness of bulk of the work, allowing its use in all cases where flat teeth can be applied at all, and the readiness with which the work can be removed and repaired in the event of a fracture; the removal being made by drilling out the amalgam and straightening or, if need be, cutting the pins.

The patient to whom this work was applied had been wearing a gold plate carrying two centrals, and his laterals were too far gone to admit of further gold filling.—*Jour. Brit. Dent. Asso.*

FRACTURE OF THE INFERIOR MAXILLARY BONE RESTORED BY THE APPLICATION OF AN ALUMINUM PLATE.*

BY M. RONNET.

Translated from the French for THE OHIO JOURNAL by M. V. del Valle, U. of M. Ann Arbor, Mich.

THE fractures of the inferior maxilla are not rare on the records of surgery, but they are exceptional among the patients of the city, and for this reason dentists find themselves embarrassed the day it is necessary for them to treat one of these cases. It is not necessary for me to repeat all that has been said in regard to this question, I want only to present some considerations with regard to a case recently on my hands and which,

* Communication to the Odontological Society of Paris.

though the fracture was a simple one, the patient could not have it treated in two of our large hospitals.

Louis Corr, 36 years of age, born at Roussillon (Saone and Loire), workingman on the Northern Railway, had in his 17th or 18th year of age an attack of hysteries and after that he had them regularly two or three times a year.

In one of these attacks (1st. of Nov., 1888) while he was walking along with his wife he fell down against the hard road. He was taken to the nearest druggist who, perceiving some injury about the face, advised him to go to the hospital.

The 2nd of Nov. he presented himself to the Lariboisiere Hospital and was admitted. He had no or very slight inflammatory period. During several days he was made to take gargarism, after which they tried to use an apparatus, which we think by its description to be that one of Houzelot, but as they could not arrive to any marked success, they were contended with applying irrigations and gargarism, a bandage keeping up the fractured maxilla.

Fifteen days after the patient was dismissed from the hospital, and told that the consolidation would take place alone—he then began to work again. Few days after the left canine below the fracture being loose the patient lifted it with his fingers. Towards this period there was also a fistula under the chin.

Seeing that the cure did not take place he presented himself the 18th of Jan. to the St. Louis Hospital, expecting that they could remediate the fracture, but more especially the fistula which was progressing rapidly.

As I was under the service of Dr. Peau to see another patient, Corr was presented to us and we began to make him an apparatus with which to obtain the reunion of the fragments. The fracture was unilateral of the inferior maxilla passing between the left canine and the first premolar.

ACTUAL CONDITION.—As we have said the canine did not exist and the line of fracture was oblique in the sense antero-posterior and almost vertical according to its size.

There was very little displacement and only at the expense of the fragments comprising the right side, the right fragment was nearer the left premolar in such manner that there was no trace of the loss of the canine. The lateral incisor and the premolar touched each other.

Below the fracture there was a fistulous duct opening on the under part of the chin, the fistula not having a very abundant discharge. The general condition was good; no pain, little trouble in the speech, but the mastication was difficult.

At first we had the intention of applying the Martin de Lyon apparatus, but on account of certain difficulties of execution we gave it up.

What we used was made of two parts, 1st, an internal apparatus in aluminum swage covering all the surface of the inferior teeth and holding the fragments in position, so reducing the fracture. 2nd, an external sling keeping the apparatus in place and the parts in apposition so as to preserve the shape of the face. The 24th of Jan. we put on the said apparatus, next day he entered the hospital. He was ordered to take constant washes of borax water with a syringe.

The 4th of Feb. we saw our patient but no notable change. Nevertheless, less suppuration through the fistula, but the patient said he had the maxilla out of place. This phenomenon was due to a slight displacement of the sling which we remedied, putting it back in place. Continuation of the antiseptic treatment followed.

The 18th of Feb. the fistula was cured, the maxilla had remained in place for three or four days, the granulation was in a state of formation. We took off the sling but left the plate in place. We continued the antiseptic treatment until the 27th when we sent the patient away from the hospital totally cured.

Thus after the time of the fracture and the application of our apparatus the union and consolidation of the osseous parts were made in a month. The plate in aluminum had enough rigidity to prevent the displacement and re-establish the normal articulation. The accidents following our treatment disappeared quickly and the cure followed rapidly after the putting on of our apparatus. This shows that the successful treatment of the fracture of the inferior maxilla can be accomplished in a simple manner.

SUPPORT FOR LOOSENED INCISORS.

In an article on some surgical aspects of Rigg's disease, read before the Odontological Society of Chicago, and printed in the *Dental Review*, Dr. GARRETT NEWKIRK gives the following

method of supporting loose teeth: Writers have not failed to impress the importance of this principle as applicable to loose teeth, in that they should be supported and held by attachment to those adjoining. I can say no more than Dr. Harlan has said long ago on this point, except to speak of a method with which my experience has been particularly favorable in supporting lower incisors. It is not new nor original with me. Dr. Nichols, I think, brought it to our attention some six years ago, at a meeting of the city society. For some reason it has not been so generally applied as its merits would warrant. I refer to gold bands soldered together. I remember that when this was first presented to my attention the task seemed quite difficult, and I continued for some time to use wire and ligatures, because I rather dreaded to undertake it. But it is quite a simple thing to do, and a joy when completed. I take narrow strips of thin gold, about gauge 30 to 32, and pinch them about the teeth with small pliers, just where I want them, far enough from the gums so that a narrow scaler may be passed beneath when necessary for the removal of tartar. To make sure that none of the bands exchange places and so get onto the wrong teeth, I have a little block in which are driven a row of common pins. The unsoldered bands are placed in order on these, taken off, soldered, and replaced one by one. The soldering process is best accomplished by holding them with delicate pliers over a small gas-jet or spirit lamp, and before cutting off the projecting ends of the gold.

Should the incisors come very close together at their corners, these must be rounded and separated enough to permit the double thickness of gold to pass when the bands shall have been fastened together. The bands are then placed on the teeth nearly to place, but not quite, lest there should be difficulty in removing them without injury. An impression is then taken in modelling compound, and the bands removed and placed in the impression. Plaster and marble dust are mixed and poured, and plenty of time given for thorough setting. On removing the compound we have the bands in precisely the relative positions desired, and a little solder fastens them together on their lingual aspect. The solder should not flow far into their approximal surfaces, for the reason that it will interfere with an accommodation to be presently mentioned.

Now apply the rubber dam to all the teeth concerned, and

one more on each side. You know the appliance must fit, because it has been there, less the connecting links. Now, to place it on, the bands must be pinched together somewhat antero-posteriorly, so that their lateral surfaces meet closely, to enable them to pass the corners. Then the pliable bands readjust their diameters, as they are tapped lightly to place. Of course the teeth should be thoroughly clean and dry (I usually rub them with a little pumice), and the bands should be lined with very thin, slow-setting cement. To place this appliance properly under the heading of the paper, we may call it "*Gold Splints.*"

In one instance I have kept some lower incisors in place about four years, whose roots were but slightly attached by their upper thirds. The looseness of the teeth had caused continual annoyance, and the patient has been correspondingly grateful for the relief and comfort since experienced.

REPAIRING PLATES.

IN repairing cases where a section of the rim is broken off, a full upper or lower denture, and cannot be reached from behind, I consider the following method a very efficient one: Remove a portion of the rim where broken, and on each side of the removed section, bevel down to a feather-edge. In this beveled portion drill several small holes and therein proceed to pack the rubber, and continue packing until the removed portion is bridged over and united with the other side. After having added the required amount of rubber, take a hot burnisher and smooth down the surface as though it were wax, and then invest it in a flask in one mass of plaster; after the plaster has thoroughly set, vulcanize. By doing this I save time and unnecessary labor. I always make my plaster model before removing the broken pieces of plate, as usually done in most repairing cases. There are hundreds of ways of repairing plates, but this one I consider especially worthy of mention.

A very useful thing to use in all repairing cases, I find, is the liquid rubber. Paint the surfaces where you wish your rubber to adhere, with it, and you can then very easily pack your piece without the use of heat, and at the same time afford a firmer union between the old and new rubber.—DR. WM. BARTLETT, in *Archives*.

TO REMOVE THE SPRING FROM METAL PLATES.

SOMETIMES in swaging a partial or full plate there will be a spring in the plate, which it seems almost impossible to get out; and after spending half a day in vain to remove it, one is often tempted to throw it away and commence anew. Should you ever get a spring in a case of this character, all the pounding you can give it in a day will not remedy it. I treat such cases in the following manner: Take the plaster model which is used in making the dies, and set the plate upon it, and in as nearly a correct position as possible, and on the side of the model cut some small grooves at different points. Force the plate down into the face of the model, into the desired position, and at the same time pass over it a piece of copper wire (size 21 of standard gauge), carry the ends of this wire around the model, bringing them together and twist them until the wire binds down the plate to the model. Use as many wires as are necessary to bring down the plate all around. Then heat the plate to cherry-red, and allow it to cool slowly. After removing the wires, you will find that the spring has departed. This same method can be applied to plates with teeth, by investing in sand and plaster after having applied the wires, and then slowly heat the mass upon a lamp or furnace before using the blow-pipe.—DR. WM. BARTLETT, in *Archives*.

NEW BASE PLATES.

MR. EDITOR:—At the Maryland State meeting, some base-plates were shown made with wax and shellac; the latter to give hardness, and on which a patent has just been granted.

Ash & Sons, of London, have made this preparation for many years, and I discarded the use of it for two reasons: in cold weather it is extremely brittle, while in either vulcanite or plate work the shellac caused great trouble by adhering to the pins or plate; no amount of steaming would dislodge it previously to packing, and vulcanite will not mix with it. It thereby caused loose teeth, and the most disagreeable rattling noise if tapped.

In metal work it burns on and no flux will flow where shellac comes in contact, causing black spots on the work.—D. GENESE.

CARE IN PACKING PARTIAL CASES.

IN packing partial cases with black rubber, you will often notice that after they are vulcanized the rubber has drawn away from the pins and left the tooth in a loose condition: to avoid this, pack around the pins a small piece of *red* rubber, and you will have no loose teeth, there being less contraction in the red than black rubber, thus affording a better hold on the pins.

The packing of cases is a piece of work which requires considerable practice to enable the operator to become exact in his measurement of the amount of rubber to be used. A good guide is to always save the piece of wax taken from the flask, and in removing it, try to preserve its shape, so as to give you almost an exact idea of the amount of rubber required.—DR. WM. BARTLETT, in *Archives*.

MAKING AND SETTING CROWNS.

DR. S. S. STOWELL'S method is as follows: The root is prepared in the usual way and the pin and cap of metal carefully measured and adjusted. The pin in the crown, if it be a Logan, is next cut off, with the exception of a small piece that is allowed to remain. The crown is next ground and fitted to the cap over the root, after which it is removed and gold melted into the undercut and around the pin, the metal being spatted down while in a state of fusion, which forces it to every part and produces a flat surface. The crown is again ground to fit the cap, and afterwards soldered to it, thus producing the most cleanly crown it is possible to make. It is cemented to the root in the usual way.

Correspondence.

"I charge you that this epistle be read."

A LETTER FROM LONDON.

TO THE EDITOR OF THE OHIO JOURNAL OF DENTAL SCIENCE:—It has occurred to me from casual observations made at the meetings of dental societies during the reading of and discussions upon papers having any bearing upon chemical science, that the study of chemistry had received but a very superficial attention at the hands of our profession.

The important part that chemical action plays in promoting the necessity for our calling is so manifest that any one capable of connecting two ideas must be impressed, if the subject was only given a moment's consideration, with the important place it should have in our college courses.

The average dentist is an exceedingly deficient chemist, instead of being a good one, this probably accounts for the general slipshod nature of operations as we find them to-day; the study of any exact science, especially one as interestingly demonstratable as is chemistry, is sure to promote an exactness and thoroughness that will surely manifest itself through the details of every day practice.

Cases are not wanting in which it is observable that chemical nomenclature is handled in the most careless manner, acids and bases are made to form the most grotesque combinations, producing reactions that are perfectly startling in their originality, and these not infrequently at the hands of members of the profession who had been looked up to with reverence by our younger members. There is certainly no profession wherein science and art are more intimately blended than in ours, therefore I claim that in no other is there a greater necessity for a thorough knowledge of chemical science. Dentistry to-day occupies a position peculiar in its uniqueness, having been evolved from the darkest ignorance of superstitions empiricism, it has planted its roots down firmly into the exact sciences, and spread its ever widening branches into the realms of art, until its growth has attained a symmetry that at once commands the respect of kindred workers, and can only act as an incentive to continued effort.

To those essentially interested in dentistry as their life's work, I would call especial attention to the necessity of a thorough practical acquaintance with the subject of chemistry, there is no study that may possess more interest to the student, where it is prosecuted in the right way, nor is there any subject that will promote more healthy, accurate prospective reasoning, for there is no part of our daily work wherein its principles are absent, or its effects are not visible, this being the case, does not the necessity of a more thorough knowledge of such an important factor in modifying our failures or promoting our successes, involuntarily thrust itself upon us? Our methods of treatment

have been almost revolutionized through our better understanding of underlying principles, and chemistry has played no unimportant part in the change.

Would it not be best for our dental colleges to place as much stress upon the necessity of their graduates to be as good practical chemists—from an analytical standpoint—as they do to their being meritorious operators or plate workmen?

The requirements in dentistry for chemical knowledge is evident in all one work, as before suggested; patients as they present themselves are victims of chemical action, the result of perverted function in many cases, this must be contended with, either by palliative, conservative, or radical treatment; to generalize, the foregoing field is fundamentally dependent upon chemical reaction in connection with more or less perfect mechanical manipulation for restoration to practically normal conditions.

Herein lies the necessity for the keen discrimination necessary for utilizing exact means for the promotion of definite results, this capacity is best developed by a study of subjects whose laws are inexorable, promoting a definiteness of purpose that will command successful issues, where absence of system and rule of thumb would court, if it did not positively result in failure.

The comparative absence of papers upon dental chemistry at our meetings is to be deplored, and the apparent apathy of the profession upon this subject is to be regretted, this might be remedied by additions to the collegiate instructions in the way of practical instructions as to assaying, metallurgical manipulations, analyzing and making different filling materials, and studying the effect of heat, cold, and surroundings in modifying results, this would be quite a step in advance of where we now are, and would promote a friction of healthy ideas that would soon bring to the front an important integer of our professional repertoire that has of late been too sadly neglected.

Yours truly,

W. MITCHELL.

LONDON, ENG.

QUERIES?

EDITOR OHIO JOURNAL.—Will some one oblige me by answering the following questions regarding the examination held by the

State Board of Dental Examiners. For example the Minnesota or Colorado. Also is there any treatment *thoroughly successful* in a bad case (chronic) of pyorrhœa alveolaris? If so, what?

Yours truly, A. L. V.

1. In what subjects is a candidate examined by the State Board? (Anat., Phy., Chem., Path., Clin. and Prosthetic Dentistry, Materia Medica.)

2. If oral or written?

3. Has a candidate to do fillings or make artificial plate in the presence of the Examiners or only to describe the necessary steps?

4. What privileges does such a license give and if *only* for the State in which the examination was taken?

5. Can examples of the questions be obtained?

Editor's Specials.

"Write the Vision and make it plain."

DEATH'S DOINGS.

DOCTOR A. S. DRYDEN, who has written several able articles for the OHIO JOURNAL, over the signature of "Galen," died January 30th, 1890. He was attending to his business till within a few days of his death. His principal trouble was with the bladder and kidneys, and he sank rapidly. His sufferings were severe, even though he had careful medical attention. He was possibly, in part, a victim to his own treatment. A physician generally gives himself severer treatment than he administers to his patients. As a citizen Dr. D. will be missed. He was coroner of the county and a member of the board of health. He was one of the first to volunteer in the war, being a member of the 7th Ohio Cavalry. After the war he was in the regular army, being most of the time a surgeon. Several years ago he united with the Methodist Church, and leaves a widow of that denomination to mourn his departure.

As a writer Dr. D.'s style was chaste and clear. He was ordinarily content to write plain English. As he wrote for the OHIO JOURNAL over a *nom de plume*, his writings were sometimes

taken for the Editor's; and we never felt compromised by the mistake. Dr. D.'s age was about fifty-four.

TIN.

IN the February number of the OHIO JOURNAL, Dr. S. H. Harlan has something to say of this metal well worthy of attention. As it is short, better the whole article.

He speaks of the "therapeutic properties of tin as an obtundent of hyper-sensitive dentine." While we clearly understand the import of his remarks, may it not be well to raise a question as to the nature of these properties, and inquire whether or not it has any such properties in the metallic state.

Tin is a very valuable metal in dental therapeutics. Whether we understand its value or not is another question. It has not a very strong affinity for most of the non-metallic elements or reagents. When tin fillings corrode in the mouth the re-agent is likely to be chlorine rather than oxygen. It is well to be minute, as oxygen is regarded as head devil in chemistry.

Now we see where the therapeutic action comes in. Chloride of tin, or calcium chloride acts definitely on the organic matter of the tooth, rendering it less soluble, and consequently less liable to decay. We cannot imagine any other way in which tin is likely to exert any medicinal action on dentine.

DENTAL PROTECTIVE ASSOCIATION.

WE instinctively like fair play, but an individual dentist has but little chance to get it in the hands of a big, soulless corporation. The moral of this is in the application of it—that is, ORGANIZE; and here's your chance.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

ROOT FILLING.—For root filling I use a paste composed of iodol, one part; zinc oxide. two parts, and carbolized cosmoline sufficient to make the paste a proper consistency.—DR. LORD.

NICKEL DRESSING FORCEPS.—DR. BENNETT recommends a pair of solid nickel forceps for application of medicaments. They resist the destructive action of all medicaments, even iodine and strong tincture of iron, although iodine slightly stains the nickel, it can be washed off.

TO ABORT AN ABSCESS:

R	Ext. Aconiti, fl	-	-	-	} equal parts.
	Ext. Belladonnæ, fl	-	-	-	
	Ext. Opii, fl	-	-	-	

M. Sig.—Apply with brush as needed to ease pain, also give fl. ext. phytolacca internally.—*Exchange*.

RETENTION OF TEMPORARY TEETH.—In our desire to retain temporary teeth, we must be careful not to keep them too long. Many have a great dread of removing temporary teeth “because the jaws contract and the permanent teeth cannot come through properly,” are the usual reasons assigned. We have never seen any evidence of this. On the contrary large numbers of cases have come under notice where the temporary teeth have been lost very early, without any overcrowding of the permanent teeth.—DR. R. D. PEDLEY.

COMPOSITION AND PROCESS FOR TEMPERING INSTRUMENTS.—Take rosin, $7\frac{1}{2}$ parts; whale oil, $1\frac{1}{2}$ parts; pulv. charcoal, $\frac{1}{2}$ part. Directions for use: the instruments should be dipped in the mixture same as in water, then polish and draw the temper as usual. Small instruments should be dipped but once, larger ones two or three times. For engine and other small drills, which I want very hard, I heat to a bright red and dip in just the drill point,

and do not draw the temper. In dipping for this last work dip the point straight down, not obliquely.—DR. WILLIAM STEELE, in *International*.

CLEAN JOINTS.—I have seen many enquiries and suggestions in our journals in regard to making sightless joints in putting up sets of section teeth on rubber, or when rubber is used as an attachment, but in all I have never seen any suggestion as to the following method, which I have adopted with success, and give for the benefit of the readers of the *Archives*: When the case is flaked and ready for packing, I first cover each joint with a strip of No. 30 gold foil, one-fourth of an inch in width, burnish it down evenly, and holding it in position with a small piece of pink rubber. I then pack as usual, and find, after vulcanizing, the joints perfectly clean, as no rubber can be forced through the gold strips into them.—DR. B. Q. STEVENS, in *Archives*.

COMBINATION FILLINGS.—DR. J. TAFT says: The subject of combination fillings is a very interesting one to me, and the experience I have had with this class of fillings during the past two years has been most gratifying. The only objection I have to them is in the slight discoloration of the tooth afterwards; but I find that the less amalgam I use in the cavity and the drier I pack it, the less discoloration there is. Given certain conditions of tooth substances, means of access to cavity, etc., and it seems to me that amalgam and gold in combination makes a better filling and preserves the tooth better than any other material we make use of: but the exercise of good judgment, carefulness and skill, are as essential to success with combination fillings as they are with either gold or any of the plastics.—*From Archives report Harvard Odont. So.*

PREPARING ROOT CANALS.—I enlarge the canals without any exception where I can. You cannot always tell the exact length of the root so as to be able to open it up to the apical foramen. I open them up for two purposes: one is that I may better know what I am doing, and the other in order to remove a portion of the dentine. The tubuli of the teeth are filled with semi-fluid material which if permitted to remain will certainly take on putrefaction under ordinary circumstances. If you have any doubt about it, cut into the crown of a tooth in a young person,

that has only recently lost its vitality, and carry a portion of the dentine to your nose, and you will find what I say is true; putrefactive decomposition has been going on. I want to remove a portion of that affected dentine, and hence I enlarge the canals where I can. Where I cannot do that, I cleanse them as well as possible by the ordinary methods.—DR. W. H. MORGAN, in *Headlight*.

MENTHOL IN NEURALGIA.—Menthol has a distinct use in relieving neuralgias of the fifth nerve and other local painful affections. Its local employment, either in stick or in plaster, is very popular. It is, in fact, a local anæsthetic, and, moreover, when applied in plaster, gives a comforting sense of warmth to the painful part. Its action, so applied is not, however, very powerful. Its internal administration has been advised by Dana for many painful affections. In doses of five to twenty grains it gives a pleasant feeling of warmth, while it stimulates the cardiac action, without increasing its rapidity, and raises the arterial blood pressure. But the chief action noted was that it relieved pain. It was found especially valuable in migrain and supra-orbital neuralgia, and in the headaches of neurasthenic and anæmic patients. In some cases of sciatica relief was obtained; thus adding another drug to the multitude which may be used, often without effect, in this neurosis. Dana goes so far as to recommend menthol in preference to antipyrin in certain cases, in weakly and anæmic individuals in whom the administration of antipyrin is not without danger, owing to its tendency to produce collapse.—*British Medical Journal*.

NERVE CAPPING.—First, I remove all decayed and diseased dentine as thoroughly as possible and smooth down the edge of the enamel around the cavity in the tooth, just as I would in a tooth where I was going to put a gold filling. Then if the nerve is badly inflamed, I make an application of pepsin and cotton wool, and cover with sandarach and cotton, allowing it to remain twelve hours. I then remove this and apply creosote to cavity after having applied rubber-dam so as to keep the cavity dry. I let this remain for about half a minute and then remove and dry the cavity with cotton, wool or other absorbent material, then I fill the bottom of cavity next to the exposure with gutta-percha, which being a non-conductor and non-irritating substance, is well

adapted for this purpose. There is some danger of pressing this down too hard and causing it to act as an irritant to the pulp, so I cut a piece about the right size and put it down without warming it. I then heat a burnisher and press down around the edges of this piece so as to make it adhere to the walls of the cavity. I then place over this a filling of oxyphosphate material and let the patient go, with instructions to come back to me at once if the tooth gives him the least trouble. At the expiration of three months if the tooth has not given trouble, I will remove the cement sufficiently to give me a firm anchorage for a metallic filling, which I place over the capping. In case there is not much inflammation, I do not use pepsin but apply creosote and capping at once and then the permanent filling afterwards, as in the first case. I can show teeth now, which I filled two years ago, which are perfect at present and are in a fair way to remain so.—DR. W. F. HOLT, in *Headlight*.

USEFUL HINTS.—DR. W. BUZZELL sends us the following items: *Chewing Gum*.—To prevent the mucous membrane from being abraded by springs or other appliances used in regulating teeth, instruct the patient to spread a small piece of *chewing gum* over and around the springs or irritating contrivances and you will avoid the trouble. "Everything has its use."

"*Dorrance's Alloy*."—This alloy is made of silver, 1 part, zinc, 2 parts, and copper, 3 parts (metals must be pure), and is used to alloy gold or silver plate for making solders. It makes a strong, easily flowing, and tough solder that follows the color of the plate from which it is made. I prefer it to the solders that I have been able to buy, and can profitably use my plate scraps. If the dental depots would furnish this alloy they would do the profession a service.

Fragments of roots broken off in extracting, can often be easily removed by burring away the alveolar process immediately surrounding them thereby avoiding much pain and laceration. It would be an advantage if the dental instrument makers would make some burs with long shanks for this purpose.

It is sometimes advantageous to make a model of plaster and sand, and when the work is adjusted, do not remove from the model, but add enough more plaster and sand to hold the parts in position, remove wax, and solder.

HYGIENE AND TREATMENT OF PRIMARY DENTITION.—According to DR. MONTI (*Revue de Mal. de L'enfance*), all interference with primary dentition should, as a general rule, be proscribed. Accordingly, he considers as injurious the ordinary practices, as for, example, biting on hard objects, bathing the gums with so-called emollient substances, etc.

The only necessary measure of precaution is to keep the buccal mucous membrane in a state of perfect cleanliness. It is best, then, during dentition, to wash the mouth several times daily, either with pure water or antiseptic solutions. Among the latter, the most efficacious are the following :

R Acidi boracici, - - 3.00 grammes (gr. xlv).
 Aquæ destillatæ, - 200.00 grammes (℥ vij 3 vj).
 Tinct. myrrhæ, - - 2.00 grammes (mxxx).—M.

Or,

R Sodii salicylatis, - 3.00 grammes (gr. xlv).
 Aquæ destillatæ, - 200.00 grammes (℥ vij 3 vj).
 Tinct. myrrhæ, - - 3.00 grammes (mxlv).—M.

When the milk-teeth have appeared, they should be cleansed with a very soft brush, using either one of the preceding solutions, or a suitable dentifrice. The following, recommended by Zsigmomby, gives excellent results :

R Magnesii carb.,
 Pulv. saponis, - aa 10.00 grammes (3 iiss).
 Pulv. ossis sepia, - 10.00 grammes (3 iiss).
 Essentiæ menthæ, - gtt. iv.—M.

In very young children the following mixture may be better :

R Magnesii carb., - - 5.00 grammes (gr. lxxv).
 Cretæ præparat.,
 Sodii salicylatis, aa 15.00 grammes (3 iij gr. xlv).
 Essentiæ menthæ, - gtt. iv.—M.

When the milk-teeth commence to decay they should be filled at once, that they may be preserved as long as possible.—

The Satellite.

Societies.

"Wherewith one may edify another."

MEETINGS.

Mississippi Valley Dental Society meets annually at Cincinnati. Next meeting on First Wednesday in March, 1890.

Vermont State Dental Society meets annually. Next meeting at Bellow's Falls, March 19, 1890.

Alabama Dental Association meets annually. Next meeting at Birmingham, on the second Tuesday of April, 1890.

Kansas State Dental Association. Next meeting will be held at Topeka, April 30, 1890.

Iowa State Dental Society meets annually. Next meeting in Dubuque, on the first Tuesday in May, 1890.

Texas State Dental Association meets in Buton, first Tuesday in May, 1890.

Northern Ohio Dental Association meets annually. Next meeting at Canton on the second Tuesday in May, 1890.

Georgia State Dental Society meets second Tuesday in May, 1890, at Tybee.

Illinois State Dental Society meets at Springfield, second Tuesday in May, 1890.

Nebraska State Dental Society meets annually. Next meeting third Tuesday in May, 1890, at Beatrice.

The Dental Society of the State of New York meets annually on the second Wednesday in May. Next session at Albany, May 8, 1890.

Kentucky State Dental Association meets annually, first Tuesday in June, 1890. Next meeting in Louisville.

Michigan State Dental Association meets annually. Next meeting at Jackson, Tuesday, June 7, 1890.

Indiana State Dental Society meets next in Indianapolis on the last Tuesday of June, 1890.

North Carolina State Dental Society meets in Wilmington, on the fourth Wednesday in June, 1890.

THE DENTAL PROTECTIVE ASSOCIATION enters upon its second year having the confidence of every member of the dental profession who believe in advancement. Those not already members should send *name, address and membership fee*, \$10.00 at once, to Dr. J. N. Crouse, 2231 Prairie av., Chicago, Ill.

NEW YORK, January 16, 1890.

At a mass meeting of over one hundred dentists, gathered from various parts of the United States, held in the city of New York, January 16, 1890, of which Dr. O. E. Hill was chairman, it was on motion, unanimously

Resolved, That we thoroughly endorse the Dental Protective Association of the United States, and urge upon every member of the dental profession to join the association and send to Dr. J. N. Crouse of Chicago, its President, the initiation fee of ten dollars.

WM. JARVIE, *Sec'y*.

CONCERNING THE DENTAL SECTION OF THE TENTH INTERNATIONAL MEDICAL CONGRESS.

IN response to a call of the organizing committee (Professors Virchow, von Bergmann and Wardeyer), fifty delegates from the various universities and medical societies of Germany met in Heidelberg on the 17th of September, 1888, to take steps in the organization of the congress. At the meeting it was decided that the congress should be held in Berlin beginning August 4th and closing August 10th, 1890.

An organizing committee consisting of Profs. Drs. Virchow, von Bergmann, Leyden and Waldeyer was elected and a general secretary, Dr. Lassar, appointed.

Eighteen sections including Dental Surgery were organized each with a special committee of nine members.

An international medico-scientific exhibiton is to be connected with the congress. Statutes and programme were adopted which will be given in as far as they particularly concern the dental section.

ART. II. "The congress consists of physicians (approbirten Aerzten) who have registered their names and obtained their

membership cards. Other savants who are interested in the work of the congress may be admitted as extraordinary members."

The delegates did not see fit to change this article so as to include dental surgeons, but decided that the article should be so interpreted as to admit dentists to membership. Since the meeting at Heidelberg the question has been raised whether dentists resident in Germany, but not possessing the German dental approbation (degree) could be admitted to membership. Regarding this point the chairman of the committee of organization decided, that only those who possess the recognized degree of that country of which they are citizens, may be admitted to membership.

A German citizen holding only an American or Swiss degree is, therefore, not entitled to membership, no more is an American or English citizen not possessing the degree of his own country; on the other hand, foreign citizens practicing in Germany are admitted without the German degree, provided they have the degree of their own country.

Members pay a fee of twenty Marks and receive a copy of the transactions.

ART. III. "The object of the congress is exclusively scientific."

ART. X. "All lectures and communications in the general sittings, or in those of the sections, must be handed, in writing, to the secretary before the close of the sitting. The editorial committee decides whether, or in what part, such communications shall be included in the published transactions."

ART. XI. "The official languages of all sittings are German, English and French. Very short remarks may be made in other languages provided some member is prepared to translate them into one of the official languages."

ART. XII. "Lectures are, as a rule, to be limited to twenty minutes, discussional remarks to ten minutes."

ART. XIV. "Students of medicine and other persons, gentlemen and ladies, who are not physicians, but are interested in the proceedings of any particular session, may be invited by the president of that session, or on application, receive permission to attend as auditors. There are to be no vice-presidents associated with the congress, but each section is empowered to elect a limited number of honorary presidents and a secretary for each of the official languages."

The committee of the dental section is composed as follows : Busch, Berlin, Chairman; Calais, Hamburg; Hesse, Leipzig; Fricke, Kiel; Hollander, Halle; Miller, Berlin; Partsch, Breslan; Sauer, Berlin; Weil, Munich.

At a meeting of this committee, held on the 16th of October, 1889, it was decided that the hours from 9 to 12 A. M., should be devoted to practical demonstrations in the rooms of the dental institute, the demonstrations to consist of operations in filling, extraction, and in mechanical dentistry, in short, operations in all branches of operative and mechanical dentistry.

Demonstrations in extraction and in artificial work are to be under the direction of Prof. Busch, those in filling under that of Prof. Miller. The theoretical exercises, etc., are to be held from 2 to 5. They will consist of the usual essays or lectures and the accompanying discussions; besides these, three subjects for general discussion are to be chosen, one to be introduced in the German language (on bromide of ethyl, by Prof. Dr. Hollender), one in the English, and one in the French language.

Those desiring to deliver lectures or read essays on particular subjects are requested to send in, along with their announcement, a very short *resume* of the contents of the same.

Correspondence in German language to be directed to Prof. Dr. Busch, chairman, Dorotheen St. 40, Berlin; in French language to Dr. Calais, Hohewbleichen 17, Hamburg; in English to Prof. Dr. Miller, Voss St. 32, Berlin.

In America Drs. Barrett and Taft; in Great Britain Mr. J. H. Mummary, M.R.C.S., etc., and Mr. W. Bowman Macleod, F.R.S.S., etc., have, on invitation by the committee, expressed their willingness to act in the capacity of honorary presidents.

A fuller report of the steps taken in the organization of the congress up to the end of October, is given by Prof. Busch in the *Verhandlungen der deutschen odontologischen Gesellschaft*, Heft 2.

W. D. MILLER.

AMERICAN DENTAL ASSOCIATION MEETING, 1890.

EDITOR OHIO JOURNAL OF DENTAL SCIENCE.—I enclose copy of vote taken in regard to changing time of meeting of the A. D. Asso., forwarded me by the corresponding secretary. According to that vote the meeting will be held at the usual time. R. R.

and other arrangements will be made as soon as needed in the those expecting to attend would notify the chairman or executive committee of their intention it would enable us to make our arrangements more definitely.

We hope a large enough number will go by way of Chicago, to warrant us in securing a special train to Excelsior Springs.

Farther information will be furnished later.

J. N. CROUSE.

Ballot for change of time for meeting of the A. D. Asst., resulted as follows: Eleven, no change; one, change; two, either or with majority; one not heard from.

FRED A. LEVY, *Cor. Sec.*

Books and Pamphlets.

VICK'S FLORAL GUIDE.—We have received from James Vick, Rochester, N. Y., his Floral Guide, which in beauty of appearance and convenience of arrangement surpasses anything in this line which we have ever had the privilege of seeing before. It is a pamphlet eight by ten inches in size, and with the covers, which are by no means the least important part of it, contains an even one hundred pages. Although called a "floral guide," it is devoted to vegetables as well, and includes as full a list and description of both flowers, vegetables and also small fruits as could be brought within the compass of a book of this size. Send 10 cents (which amount may be deducted from first order) to JAMES VICK, seedsman, Rochester, N. Y., for copy of Guide.

Our Aftermath.

DR. GRANT MOLLYNEAUX, Cincinnati, O., has removed his dental office from 195 West Fourth street to Southeast cor. of Seventh and Elm streets, where he has more convenient and pleasant rooms.

RIGHT YOU ARE.—Ohio, as usual, steps briskly to the front. Her latest products are babies born with teeth. Before long we shall probably hear of a few born with registration certificates and applications for office, all ready to be put on file.—*Baltimore American*.

TO RESTORE GLOSS TO A SILK HAT. When a silk hat becomes wet, or, from other causes, has lost its smoothness and gloss, cleanse it carefully from all dust, then with an old silk handkerchief apply vaseline evenly, and smooth down with the same rag until it is dry, smooth, and glossy. This will make an old hat look about as good as new.—*Scientific American*.

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"A word fitly spoken is like apples of gold."—SOLOMON.

NON-METALLIC PLASTIC MATERIALS FOR FILLING TEETH.*

BY OTTO ARNOLD, D.D.S., COLUMBUS, OHIO.

OF all operations in dentistry, that of filling teeth engages our consideration more extensively than all the rest. With rare exception, the largest part of an intelligent and well disposed dentist's practice is of this character.

There is a natural demand for this class of operations. People reluctantly consent to the loss of their teeth. As a rule they prefer to retain their natural organs if conditions of health, comfort and usefulness can be secured.

This being the case, the question of filling materials becomes an important one for consideration.

Gold and amalgams. The former, as yet, the peerless element for filling; the latter, so much abused and persecuted, but a most excellent compound and second only to the former in honest and skillful hands—these are to-day the only substances in general use that may safely be called permanent filling materials,

* Read before the Mississippi Valley Dental Association, at Cincinnati, O., March, 1890.

excepting platinum and platinum iridium foils that are used to a limited extent and for special purposes only. I shall not further discuss either of these, but confine myself to the non-metallic plastics.

Scientific research and inventive genius of man have been taxed to the utmost for lo! these many years, in efforts to discover or prepare a plastic substance possessing properties essential to a perfect filling for teeth, viz., adaptability, toleration, preservativeness, sightliness and indestructability; and above all requiring only a mediocre degree of manipulative ability for its use. It is useless to state that this ideal filling is yet to be discovered.

To the unsuspecting and susceptible in our profession, many tempting morsels are offered by the numberless preparations in the market claiming to meet all these requirements. Likewise are the public falsely impressed by the euphonious, but misleading adjectives under which most of them sail; for example: osteo-plastic; diamond cement; os artificial; plastic bone; porcelain cement, etc., etc., *ad infinitum*. Many, if not all of these preparations, have most desirable properties. Some excelling in one particular, some in another. In the aggregate they are useful and I may say indispensable; but as permanent filling materials they are individually and collectively, failures.

The employment of the earlier dentists of gums, as mastic and sandarac, in etherial and alcoholic solutions for the stopping of cavities of decay, is the first approach history records of plastic fillings. About the year 1848, however, the first substantial progress was made in this direction by the use of gutta-percha as a temporary filling material; this was soon recognized as an important element, and before long came into universal use and favor. A little later the well known compound, Hill's Stopping, was introduced, which is a modification of gutta-percha by the addition of certain mineral elements to make it harder, therefore more available for permanent fillings. This substance filled a long felt want, held its own for many years, and is used to-day by a large class of good operators.

About thirty years ago oxychloride of zinc was introduced, the first of a now well known class of filling materials, viz., the zinc plastics. Next in order came oxyphosphate of zinc, followed by innumerable modifications and combinations, all included in

this class now so extensive that a chronological order of description would weary the most patient auditor.

It is not the purpose of the writer to detail the chemical composition of these products, or recommend any special brand, but I propose to speak of their characteristics as a class, their practicability and general value in dental practice at the present time.

It cannot be denied that the introduction of gutta-percha and the zinc plastics was the beginning of an era in operative dentistry, that made it possible to attain results never before brought about. Prior to that time little, if anything, had been accomplished in the direction of protecting pulps from the effects of thermal irritation. The solution of this problem alone is of such intrinsic worth as to make any material capable of contributing to that end of inestimable value. All preparations of the zinc plastics, likewise gutta-percha, at least so far as the writer has knowledge, are more or less non-conductors of caloric, therefore valuable for this purpose; and from the extensive knowledge on this subject, it is almost an unpardonable offense to ignore their use in all large cavities as a protection to the pulps. These conclusions are from a practical point of view and with due deference to the experiments with the electric thermostat which indicates the contrary to be the case.

Gutta-percha, however, unless in solution of chloroform or other volatile solvent is not wholly safe, unless the greatest care is exercised to prevent its introduction into the cavity in too heated a condition. This is a serious obstacle, as the minimum degree of heat necessary to plasticity may, especially if the pulp is near the surface, be sufficient to permanently injure this organ. The pressure generally necessary to adapt this substance to place is another objection. So nothing short of the greatest caution in its use will give certain results. Gutta-percha as a filling material compared with the zinc plastics for inside use and amalgam for outer surfaces, has a limited sphere of usefulness. This deduction takes into account our present available facilities for tooth repair and restoration by crowning, and is from the standpoint, if you please, of 1890.

All filling materials are in their nature foreign to tooth material. Therefore, the substance that nearest approximates the latter in physical characteristics, comes nearest being the per-

fect filling. In this respect the zinc plastics are as yet in the lead. Their ease of manipulation, perfect adaptation without pressure, non-contractability, freedom from heat, wholesome therapeutic action and hardness, are qualities peculiar to themselves; it seems nothing further is needed to make the ideal filling except indestructability.

Each of these preparations belongs to either one or the other of two classes, viz., oxychlorides and oxyphosphates of zinc and their possible modifications. The oxychlorides have an escharotic action on organized tissue which makes them unsafe as nerve cappings *per se*; but when used in connection with an intervening layer of a non-irritant, they become useful aids for this purpose. They are decidedly antiseptic but readily soluble in oral fluids, and are distinguished as "the most preservative and at the same time the most perishable" of all filling materials. The antiseptic quality is a valuable feature for root fillings, and as these are supposed to be protected from the fluids of the mouth, their solubility in this relation is unimportant.

The zinc phosphates are less irritating in their action on organized tissue, are denser in structure and less soluble in the oral fluids, and for general purposes are preferable and in more general use than the zinc chlorides.

Briefly, then, to sum the matter up, what is the value of zinc plastics in dental practice, and to what extent should they be used? The operator being more or less familiar with the working qualities and merits of these preparations ought to be able to intelligently select the most suitable for cases in hand.

All large cavities should have a layer of this substance intervening between metallic fillings and their deeper portions, if possible, to protect the pulp from thermal irritation. This seems like an uncalled for statement, but the importance of the principle is sufficient to bear emphasizing, for there are some operators, even in this day and generation, who are indifferent in this direction, unless actual exposure of the pulp has occurred. The absence of visible signs of pulp exposure is not always to be relied upon as a guide; then cavities may be so obscurely located that a satisfactory view of their interior is impossible. In view of these elements of uncertainty—where the hazard is great—chances should be reduced to the minimum. As a covering contiguous to exposed pulps, the more neutral and non-irritating of

these preparations possess more good qualities than any other substance, chiefly on account of their adaptation without pressure and the non-generation of heat.

For filling root canals zinc plastics are unsurpassed. The method I have practiced for a long time, with more satisfactory results than any other, is to carry these to the apex on shreds of cotton of a fineness suitable to the case in hand, using necessarily the non-sticky variety. The facility and greater certainty with which the apex may be reached, combined with the imperviousness and antiseptic properties, make them the ideal root filling. For use in connection with crown and bridge-work, we have nothing to compare with them and can only say they stand alone. For entire fillings in teeth that promise pathological complications, or for obvious reasons require temporary operations, they are a most valuable material. Taking them all in all, they occupy an important place in dentistry, and we could ill afford to return to the methods in vogue before their introduction.

But like all good things zinc plastics are often abused and their use is not always followed by the best results. The grateful sense of comfort following their introduction into sensitive cavities afford too great an inducement for their use in cases demanding something more permanent. This property is too often taken advantage of for hastily terminating a disagreeable engagement rather than subserving the best interests of the patient. For the time being the patient is satisfied; but when, in a few months perhaps, the filling has appreciably disintegrated there is disappointment and a diminished regard for dental principles in general. The operator who has so little control over his patient that he cannot do thorough work at once in simple but sensitive cavities, will probably accomplish little more at future sittings. I am opposed to temporary fillings as a substitute for something better, except possibly in children's cases, or where pathological or certain sexual conditions prohibit.

But the principal provocation for criticism is the indiscriminate practice of prostituting a good thing for uses other than its proper one. Zinc plastics are used to a large extent for front teeth, and recommended for permanent work under such significant but deceptive names as, bone fillings, porcelain fillings, etc., etc. The outcome of such practice can result only against the

general good of the profession through the ultimate disappointment and loss to the innocent victim.

The remedy that suggests itself against such abuse is to be more explicit in imparting advice on these matters. We are consulted as authorities on these subjects by a confiding public; let us see to it that we enlighten them as to the facts in the case and fearlessly uphold the right. When temporary fillings must be inserted impress the patient forcibly as to their limited utility. If such fillings are preferred on account of inexpensiveness or for any other reason be emphatic in calling them temporary fillings and nothing more. It is our duty to denounce in no uncertain terms all doubtful practices that tend to reflect upon our profession. An exposition of disreputable methods in vogue for selfish gain will do no honest person harm; but, on the contrary, so strengthen public confidence as to work lasting benefit to both patients and conscientious operators, while all doubtful methods will be left to their true sphere—the office of the enterprising advertiser of nostrums and miraculous devices.

PRESIDENT'S ADDRESS.*

BY J. R. CALLAHAN, D.D.S., CINCINNATI, O.

WE are now assembled for the 46th annual session of this old and time honored Mississippi Valley Dental Society. As I look back over the records of the past doings of this society, I can see where its founders builded better than they knew. I imagine this society in its earliest days had more to do with bringing dentistry to its present high standing than most of us give her credit for doing. At the very beginning and formation of this society the founders stepped upon the very highest rounds of professional dignity and honor, and I have no doubt but that they lived up to their theories fully as close as we of to-day. The preamble to the constitution adopted at the first meeting, Aug. 10, 1844, indicates the elevated and gentlemanly tone of the founders of the society.

In the very beginning they put the seal of their disapproval on charlatanism, amalgam fillings, advertising, derogatory remarks

* Read before the Mississippi Valley Dental Association, at Cincinnati, O., March, 1890.

about one another in regard to poor ability, etc.; in fact it is hard to find anything that the most advanced of us to-day condemn that they did not speak of in no uncertain tone forty-six years ago. Many are the good things done by this society in early days; it has sown seed that has produced an hundred fold; many of the dental societies of to-day are offsprings of this old mother association

Not the least among the good fruits of this society are the *Dental Register* and Ohio Dental College. I quote from B.'s paper: "So long as our association exists it may point with pride to its record of usefulness in achieving the great feats of having been the progenitor of the oldest existing dental periodical in the world, and the second oldest dental college, both of which make their influence felt all over the civilized world."

The society spent money freely both in the practical and theoretical of the profession; they gave prizes for papers to the value of \$100; gave medals—gold and silver—for improved appliances. They seemed to be in great earnest in every way, and they did not forget to have good times, too, as they went along. From the records I find that they were wont to gather about the festal board and break bread, crack chestnuts, and have a good social time, and at the close have what they choose to call interlocutory discussion. (By way of parenthesis allow me to say we had an interlocutory discussion a few evenings since, five of us only; we all agreed that it was very profitable and enjoyable). I will read you one or two entrys from the record of the meeting held in Louisville in 1851:

The society, on motion of Dr. Griffith, adjourned to his house to test the utility of their masticating organs in preparing food for the digestive apparatus. The result was proof conclusive that their dental organs, with their muscular attachments, were in good order. This must have been at a 12 o'clock dinner, for they met again at 3 P. M. same day, and at the close of the session adjourned to meet at the residence of Dr. Goddard at 7½ o'clock. The record reads as follows: The society met pursuant to adjournment; Dr. Goddard at the head of the table; the president in the chair, and *every* member present. The discussion on the present occasion was elaborate. Each member defining well his position. All was to the point, all in order and evinced the hospitality of our Kentucky brethren. On the next evening of

the same meeting the society met at the residence of Dr. Somerbys. The following is the record: Society met at Dr. Somerbys and the first thing in order was an examination, *vi et dentales*, of a bountiful supper done up in the Doctor's happy manner. The discussion at table elicited much good feeling, which was not interrupted until after an adjournment to the parlor, when some one (who, it is supposed, had been eating too much of the Doctor's candy) introduced the subject of exposed nerves, whereupon the president took the chair and called the house to order and a very *nervous debate* sprang up, discussing the pain of such an exposure. The propriety of recovering or capping—of killing and filling. Dr. Somerby remarked that he thought it not in accordance with true pathological principles to retain a tooth in the mouth after the nerve had been destroyed, and that the operation of plugging over an exposed nerve by capping or other wise would generally prove useless, and the idea of repeatedly *tickling* the nerve to make it cover itself with new bone, was more amusing than profitable. This must have been a very enjoyable meeting and the secretary must have been of some relation to my friend, Dr. C. M. Wright.

I found in the records many little points of interest, among others that on Sept. 11, 1849, Dr. J. Taft read a paper on the Extraction of Teeth. That must have been among Prof. Taft's first papers; how many he has written since that time would be interesting to know.

Since we met last year death has claimed some of our members. The grim monster has taken from us some of our very best and most useful men; those who we can but illy afford to lose and whose places will long be vacant. Some of them were among the charter members of this society, the others have been among the strong pillars that have made the record of this society what it is. I will leave the names and virtues of these men to the Committee on Necrology.

In the early years of this society it was truly *the* dental society of the Mississippi valley. It drew its membership from all parts of this great valley and often dentists were in attendance from over the Allegheny's. It was looked upon, and was truly, *the* dental society of the west for many years; but in the forty-six years of its existence a new state of affairs has come about, in almost every State there are *local* District Societies and State

Societies and all auxillary, more or less to the American Dental Society. Under this arrangement the Mississippi Valley Society is left somewhat isolated and has lost much of its prestage. It has become somewhat local in its management and it is with much difficulty that the programs are filled up each year. Men who write papers say, I have to attend my local society so often I don't see how I can add another society to my already heavy burden, and of the workers in dental society affairs are saying quietly but with much significance, I wonder if the old Mississippi Valley Dental Society has not out-lived her usefulness. As for myself, I will not try to answer the question, it is a serious question and deserves thoughtful attention.

INVENTIONS AND NEW THINGS.*

BY PROF. J. TAFT, CINCINNATI, O.

IN the early periods of the practice of dentistry the instruments, appliances and modes, were exceedingly simple and elementary, compared with those in use now. The history of this progress and development is very interesting to those who care to make it a subject of investigation and study.

There is a present practical side to this subject of the introduction of new modes, appliances and materials, that is of special interest to every practitioner, and reference is not here especially made to the intrinsic value of these things, but to the mode of introduction and use by the profession. The usual course when a new invention is made is to secure a patent. Two motives impel to this course; the one by far the most prominent and frequent is that of pecuniary profit—indeed, this is almost universal—the other is to establish and maintain the priority of invention, and whatever of credit may attach to that fact. Against neither of these motives can aught be said when in reasonable exercise. Usually by patents an inventor can secure to himself the priority of discovery or invention; but the cases in which an actual inventor receives any considerable money profit, are rare indeed. Patents for valuable inventions generally fall into the hands of others, who have more money and greater business talent than the inventor.

* Read before the Mississippi Valley Dental Association, at Cincinnati, O., March, 1890.

So far as patents pertaining to dentistry are concerned, by far the larger proportion have proved utterly worthless to the inventors or any one else; some have been good but never developed; some have been of real worth, more or less pronounced; some of these have been used in a way that was proper and right, speaking in a commercial sense (leaving the professional aspect out of view altogether). Others have been used in ways that were regarded as oppressive and unjust—extortionate; such for example as the rubber patents of twenty-five years ago, under the Bacon administration. Patents are now being used in a manner that seem to the profession to be oppressive and unjust—it is needless here to specify—but this opinion prevails in the profession almost universally. Out of this condition of things has arisen an organization the object of which is self-protection, not only from monopolies that are now in operation, but from any that may in the future spring up. This organization is known as the “Dental Protective Association of the United States.” Doubtless almost every dentist in the country knows something of this effort, and a large proportion have been fully informed on the subject, and quite a goodly number have allied themselves with it. This association arose out of a necessity; affairs had come to the point where it was either combined resistance or submission to what was regarded as a merciless monopoly. As the entire profession was, is, or may be affected by the operations of the International Tooth Crown Company, it is very natural that they are or should be as interested in an effort for their own protection; and that this interest has already assumed large proportions and is rapidly on the increase, there is abundant evidence. At a meeting of over one hundred dentists in the City of New York the other day, the following resolution was unanimously adopted:

Resolved, That we thoroughly endorse the Dental Protective Association of the United States, and urge upon every member of the dental profession to join the association, and send to Dr. J. N. Crouse, of Chicago, its President, the initiation fee of ten dollars.

WM. JARVIE, Secretary.

And in addition to this every member of that meeting became a member of the Protective Association, and contributed his mite to its resources.

This is an illustration of the feeling that is abroad throughout the profession in regard to this matter.

In this movement there is manifest a prophecy of better things for the future.

The evils which called forth this association have existed for a long time, but such was the apathy in the profession, in regard to the subject, that it has assumed proportions that are alarming; and which, without arrest, will become a burden and a great oppression.

The entire subject of patents, nostrums and secret remedies could with great propriety, and indeed should receive the special attention of the Protective Association, and thereby the profession would receive great benefit.

To relieve the profession, to some extent, from the embarrassment that attaches to the introduction of new inventions, appliances and instruments and modes, as now in vogue, it would seem practicable to organize, either through the Dental Protective Association, or the American Dental Association, or both jointly, a Commission, consisting of three or more experts, who should examine and decide upon the merits of every new invention or improvement, whether pertaining to instruments, appliances, materials or processes, and secret preparations as well, whether patented or not. Such a commission should, of course, be thoroughly competent, free from prejudice and bias of every sort, one whose opinions and decisions would not only have the respect, but command the confidence of the profession in the matters committed to its charge.

Such a course would afford protection to the profession, not only in regard to veritable frauds, but as to many things that are in themselves worthless, but are not presented and pressed in a fraudulent way. It may be that there are some things with which such a course would not be practicable; they would, however, be very few, and possibly none would be found, but it would be entirely practicable with the very large proportion of new things.

In regard to some new things it may be said that much time is required to determine their value or merits; while this is true, no more time would be required for determination by such a commission than by the individual members of the profession, and besides such examiners would have more experience and far more extensive facilities for making thorough tests. And further than this it may be said that now and again a person will be

found who can make a success with that which to most persons proves on trial to be worthless; such exceptional cases should not in any sense be a guide for all others.

There are some who always prefer to decide for themselves. This privilege would in no wise be abridged by the scheme here suggested; but the large proportion of the profession would gladly avail themselves of the decision of such a commission, and would be vastly profited thereby. Such a course would be the means of weeding out all worthless things that might be pressed forward solely because they were new, and would greatly enhance the value, success and usefulness of the really meritorious.

This method could be further expanded, so as to embrace a reasonable compensation to all who should bring forth, or invent anything new and really meritorious. And thus all the really valuable inventions, improvements, etc., would become available to the profession without being clogged with patent fees, royalties, etc. Such an arrangement would be more satisfactory to the inventors than the present, and doubtless more beneficial to the profession; for then every one would have some assurance as to the value of any new device or process before adopting it in practice; and money would not be wasted on worthless things. It would also prevent the fruitless waste of money in embarrassing litigation.

Such a commission, if properly organized and sustained, would be of incalculable benefit to the profession; it would wholly revolutionize the method of the introduction to the profession of inventions, improvements, processes and preparations, and afford a protection and a guarantee that could in no other way be secured.

Such an arrangement would bring the scientific, practical and financial interests of the profession into closer relationship than has hitherto existed, or that could be effected in any other way, as far as now appears; and not only this, but it would serve as a strong bond of union between the members of the profession: and everything that tends in this direction should be appreciated and fostered.

If the profession, or a majority of its members, should become members of the Protective Association, and an organization such as here suggested should be effected, and its work properly carried out, it would be a death blow to dental patents and nostrums.

The aim of this paper is to give some preliminary suggestions and thoughts that may stimulate others to think in the same direction, and prepare for progress in the future when the way shall seem to be open.

PROFESSIONAL ETHICS AND HONOR.*

BY W. STORER HOW, D.D.S., PHILADELPHIA, PA.

A PROPOSITION that the subject of Ethics should be ethically discussed, would seem to be so manifestly self-evident, that assent should follow its mere statement, but a moment's consideration brings to mind the fact that, whatever the profession of a person may be, the reduction of professed ethics to practice is a matter of such confessedly great difficulty, not to say rarity, that the discussion of the subject is an undertaking of extreme delicacy and intricacy, not unmixed with danger of personal conflict.

The hand of history points with awful significance to the blood-stains on its pages caused by violent discussions of questions of an ethical nature, and the most sanguinary combats have often been between parties professing peculiar regard for principles of personal purity and righteousness.

The advent of the Prince of Peace, and the gradual growth of real righteousness from that day to this has, however, made it at least probably practicable for men now to meet and compare their views on questions of correct conduct without imminent risk of coming to blows in the event of disagreements during the discussion.

Members of a dental society as a body of men associated for the avowed object of promoting unity of action in the prosecution of a commendable calling, and living at a time and in a country wherein the largest liberty of speech and conduct prevails, are especially favored in facilities for the unrestricted consideration of every suitable subject connected with their association as representative American dentists.

Ethics as immediately related to the practice of dentistry was made the subject for discussion at the 1866 meeting of the American Dental Association at Boston, Mass., and what has been termed a "Code of Ethics" was formulated as a prescrip-

*Read before the Mississippi Valley Dental Association, at Cincinnati, O., March, 1890.

tion of definite rules of professional conduct with which lines every dentist would be expected to practice in order to be eligible for, or to continue in the membership of the association. That code consists of four articles bearing titles as follows: Article I. The duties of the profession to their patients. II. Maintaining professional character. III. The relative duties of dentists and physicians. IV. The mutual duties of the profession and the public.

The law of association and the laws of associations are not always practically in harmony, however concertive they may seem to be in theory or on paper. The disposition and the determination of men to group themselves because their individual pursuits or vocations are similar in kind or character, may be said to find an initial expression in the common desire of every person for the companionship and encouragement of some other congenial person. Hence, broadly considered, arise every species of social aggregation and organization. Hence also arises the necessity for the clear definition of, and a general assent to a well-understood expression of the courses of conduct which may be agreeable or disagreeable to the members of the group.

In the present instance the code has for more than twenty years served as a working formula for the generally harmonious membership of that association, which has been in great degree representative of the steadily advancing dental profession in America.

At a time and in a land wherein the actual practice of ethical precepts has become more general than in any previous age or other country, it is certainly pertinent to the declared objects of such associations that every reasonable endeavor should be made to have professional practice conform to professional ethics at every proper point of the published agreement.

With a view to the careful consideration of some fundamental features of the code and without prejudice to the features not commented upon, the 1st Section of Article 2 is here quoted:

"A member of the dental profession is bound to maintain its honor, and to labor earnestly to extend its sphere of usefulness. He should avoid everything in language and conduct calculated to dishonor his profession, and should ever manifest a due respect for his brethren. The young should show special respect to their seniors; the aged, special encouragement to their juniors."

Honor is a word of so many meanings that the sense in which it is used in Section 1 may be open to question, or at least to a clear definition. According to Worcester, the prime significance of honor is: "Esteem or regard founded on worth or opinion; reputation; repute; fame; glory."

"Honor makes a great part of the reward of all honorable professions."—*Adam Smith*.

"Honor and shame from no condition rise;
Act well your part—there all the honor lies."—*Pope*.

Webster defines it as primarily: "Esteem due or paid to worth; high estimation; consideration."

"A nice sense of what is right, just, and true, with a course of life correspondent thereto."

"Say, what is honor? 'Tis the finest sense
Of justice which the human mind can frame,
Intent each lurking frailty to disclaim,
And guard the way of life from all offense
Suffered or done."—*Wordsworth*.

Of these few from the many significances of the word, we may reasonably consider this last citation to embody the ethical meaning of honor as applicable to a profession, and as including its practice in a course of life correspondent thereto.

It will be noticed that the crowning quality of honor is justice in its finest sense. Webster says that justice is "the quality of being just, the rendering to every one his due, right, or desert; practical conformity to the laws, and to principles of rectitude in the dealings of men with each other; honesty; integrity in commerce or mutual intercourse; strict conformity to right and obligation; rectitude; integrity; impartiality."

When, therefore, we think or speak of professional honor it is evident that we should have in mind some of the noblest attributes of man. Because nothing is more certain than the fact that, since the professional honor as a whole is the aggregate of the honor of its members as individuals, so the quality of that honor as put in practice will indicate surely the real estimation and significance in which the word is held by a representative member.

The code correctly counts upon the strictly representative professional character of every member, and it is therefore of the first consequence that his conception of what it is to maintain its honor, should be of the highest and noblest kind. The subject is

of the more importance, because of the prevalence of confused and even perverted notions as to what is actually expressed and implied in the common usage respecting honor. Indeed, it is often of great assistance in discovering the real import of a word to first find out what it clearly is not.

Professional honor is not akin to pride, which is "inordinate self-esteem; behavior which indicates contempt, or slight esteem of others." "Pride is that exalted idea of our state, qualifications, or attainments which exceeds the boundaries of justice, and induces us to look down upon supposed inferiors with some degree of unmerited contempt."—Cogan. The sharp contrast between this which "exceeds the boundaries of justice" and "the finest sense of justice the human mind can frame," sufficiently discriminates words which too often are used as if they were ethically of the same or like quality. It is therefore clearly incompatible with professional honor to "look down upon supposed inferiors with some degree of unmerited contempt." The contrast also enables us to see distinctly that honor, especially professional honor, is not self-esteem; not egoistic, but altruistic—it is what is thought of others—what others think of the professor, in the present case, of the dentist—of you and of me. "It is esteem due to worth; a nice sense of what is right, just and true, with a course of life correspondent thereto." In other words a professional man is to be so manifestly right, just and true that due honor will be paid him by all, and especially by his brethren who are capable of the esteem due to worth.

The section of the dental code of ethics under consideration has special reference to the relation of dentists to each other as associated members of the dental profession. It is certainly permissible if not essential to an intelligent discussion of these relations to inquire into the nature of a profession as distinguishable from other associations or callings.

At the outset of this contemplation it was observed that associations or societies are composed of agreeing aggregations of persons engaged in similar pursuits, and notice was taken of the fact that the present circumstances and conditions of such associations differ from those of the past. To-day it is not proper in a republic for one group or class to assume inherent superiority over another group or class. Nor is it just and honorable for one class to endeavor to magnify its own importance by contemptuously decrying another class.

The words superior and inferior have in this country lost their old-time meanings as indicating respectively dominant and servile classes. Here the professional man as a man stands on the same legal level with every other worthy workman. The word work has steadily risen in appreciation until here and now men generally are no longer ashamed of being regularly at work. In fact, the laudable ambition of every truly American youth is to prepare for and enter upon a field of honest work.

In earlier times professional work or service was compensated by presents, the amount of which in current value was determined by a beneficiary who gave whatever he might graciously be pleased to bestow. Subsequently the fee or "honorarium" came to have a somewhat definite value for a single service, or for a successful series of services. "It is still customary in Great Britain to estimate professional fees, honoraria of all kinds, complimentary subscriptions, prices of pictures, etc., in guineas; to give a physician three sovereigns and three shillings rather than three sovereigns alone, or even three sovereigns and five shillings, is supposed to make the transaction differ from a mere mercantile one, and thus to veil the sordidness which is fancied to attach to pounds, shillings and pence."

There is instructive significance in the fee of a guinea, that has a value of one shilling more than a pound, and the extra is given to show that a shilling more or less is of no consequence to the aristocratic donor, who has a lordly disdain of money, which is valued in small sums only by inferior or servile persons—such as the physician and others of his kind. There are also people in this country who affect a similar contempt for those whose services are compensated with money. Those aristocrats superciliously look down upon professional men as some of these in turn look down on persons whose services receive a smaller reward, and apishly "put on airs" as a sort of exclusive professional atmosphere.

The implication of the guinea honorarium that the shilling tip will be received without a qualm is certainly not flattering to the presumptive self-respect of the professional man. Let us by all praiseworthy means cultivate in the youngest of the professions a sense of honor sufficiently sensitive to recoil from the degradation of taking a superciliously bestowed gratuity in lieu of an equitable cash equivalent for honestly rendered professional services.

It should ever be borne in mind that the true consideration, discussion, and elucidation of professional ethics in general, or in particular, presupposes the personal possession and practice of the finest sense of honor associated with a courtesy of demeanor which, while delicate in demonstration, is yet determined in defense of the real rights of the humblest among true men in every honest vocation.

The careful cultivation of a nice sense of what is right, just, and true, with a correspondent course of life, will surely secure for the exemplar the esteem paid to worth as a great part of the reward of all honorable professions or vocations.

At this period in the preparation of this paper the writer finds in the New York *Independent* of February 20, 1890, an article by Prof. W. G. Sumner, of Yale University, and some pertinent extracts are here appended.

"* * * An American will be sure to be astonished on the continent of Europe by the scruples and mannerisms with which professional men surround the acceptance of the remuneration which they are quite as eager to get as any Yankee. It looks as if they were ashamed of their livelihood, or felt themselves lowered by taking what they have fairly earned. It is not worth while to seek such evidence of the remnants of the same sentiment as one could find among ourselves.

"The feudal period produced a new and still more intense development of the same sentiment in a somewhat changed form. All the industrial forms of livelihood were regarded as servile in comparison with the functions of the fighting classes and their ecclesiastical allies. The learned class were on the line between unless they sought ecclesiastical rank, or, later, as legists, made themselves independently necessary.

"It is only very slowly that the notions of an industrial and commercial civilization have fought their way during the last five hundred years against the militant notions. The latter have had, and still largely retain, the aroma of aristocracy. Therefore they are affected by many who do not understand them. The dictum that labor is noble, or dignified, has been a watchword of industrialism in its struggle to assert itself against militancy; but the industrial classes, as fast as they have attained wealth, have deserted industrialism to seek alliance with aristocracy, or to adopt the modes of life which the militant tradition marks as more honorable.

"* * * What, then, shall we infer? Is the sweet doctrine that labor is dignified and ennobling all wrong? Were the ancients right? Is labor for pay always degrading, and does it become worse and worse as we go down the grades from those occupations which have the most brain work and least manual work to those which have the most manual work and least brain work? The issue is clear and it is not difficult. It would do great good to solve it completely, for it would clear up our ideas on many topics which are at present in confusion.

"I maintain that labor has no moral quality at all. Every function in social work which is useful to society is just as meritorious in every way as any other, each being suitable and an object of choice to the person who performs it. The moral quality depends on the way in which it is performed. The social estimate and the personal worth which should be ascribed to social functions depends on the way in which the man we have in mind does his duty. It is not capable of generalization, and there is no reason for generalizing it.

"The educational value of different social functions is equal, and the degree of human perfection which can be got out of them is equal. It develops a man in all moral excellence, and in all that vague 'elevation' which plays such a prominent part in social speculation just as much to be a good and faithful hod-carrier as to be a good and faithful statesman."

It follows from the foregoing that current discussions of questions concerning the ethics and honor of both the medical and dental professions might well be modified by more modern views of the true relations of the several departments of reputable labor, and the correlative organizations for improvement in the methods of practice. These will doubtless be best promoted by a due recognition and just estimation of the rights and services of the individual workman in every praiseworthy calling.

The true incentive to excellence and faithfulness in any useful occupation is not to be found in the fostering of a feeling of social superiority, as of an archæologist over an artisan; an astronomer over an artist; a doctor over a dentist; an ambassador over an electrician; an entomologist over an editor; a lawyer over a laborer; a minister over a mechanic; a philosopher over a photographer; a physician over a pharmacist; a scientist over a sailor.

These sociologically absurd antitheses are adduced to add emphasis to the conclusion that professional conduct is consonant with true ethics and honor only when uncontaminated by pride or contempt in the treatment of trustworthy toilers in other lines of lucrative labor.

THE WEALTH OF DENTISTS.*

BY PROF. C. M. WRIGHT, CINCINNATI, O.

WHEN, in answer to the request of your executive committee, I agreed to write a paper, and gave the subject as the "Wealth of Dentists," a great number of beautiful, fantastic, instructive and valuable ideas were chasing each other through the gray matter situated in the cortex of my cerebri. When I seized my pen and prepared to find some of these aforesaid ideas, I found them very slippery in morphological characteristics and extremely difficult to catch. I feel like a man trying to eat oysters with a toothpick, or peas with a two-pronged fork. Nevertheless, having promised the committee, I have faithfully persisted and hope to serve up a few mutilated ideas on the subject advertised.

In considering the wealth of a nation, some writers have not only patiently enumerated the various possessions of the nation of a purely materialistic nature—such as surplus of gold and silver in the vaults of the treasury, excess of income over output, of revenue duties, interests on money loaned to railroads and foreign countries, increasing value of land, etc., etc.,—but have also taken an account of the more intangible, but none the less more real variable conditions, such as the climate of the country, the health and morality of the inhabitants of the country, the increasing intelligence of the various communities. In other words, these writers have placed the morality, the intellectual growth and the health of the people—the physical and mental prosperity of the inhabitants themselves—as items to be added up with the grosser material prosperity of the country.

I am glad that writers have taken this course—for in writing about the wealth of a class of men such as the dentists, I find that if I should be compelled to confine myself to the purely

* Read before the Mississippi Valley Dental Association, at Cincinnati, O., March, 1890.

material view, and refer only to dollars, houses, stocks, incomes, and other such worldly possessions, my essay would be complete in a very few words. In fact, the subject would hardly be worth writing about if only this narrow view presented itself. While in common with others who have studied the question of wealth as a possession by nations or individuals, I shall not neglect the question of the material possession of the dentist, I nevertheless think it fortunate that I have the privilege of referring to the moral and mental possessions of this class about which I am writing. The individual is in many respects like the nation. The law good for the individual is the law good for the nation. The economy good for the individual is the economy good for the nation. The principles of right and justice good for one are good for the other, and so on in a number of propositions. Scientists have been pleased to reason in this way in regard to laws of nature, and profess to see in the gradual evolution of the individual from a microscopic mass of protoplasm to a complete organism such as man, the law of all existing things—as true of a plant as of a planet. Not to devote any more time to preliminary observations, let us plunge *in medias res*, by stating that the dentist is a man of capital—but his capital is of a peculiar kind. It does not consist of money in the form of gold or silver, or negotiable bills, nor of deeds to property in lands or houses which are transferable. His capital, however, has a money value only in the sense that a part of it, at least, has cost money. His capital, in part, can be computed in money, when we consider the actual cost in money of the instruction he has paid for—the cost of his living for the periods of time included in his years of pupilage and in his years of waiting for practice; also, the cost of office rent, furniture, his instruments, implements and appliances. In the settling of his estate, however, much of his capital could not be set down as assets. With the exception of the second-hand value of furniture and implements the other costly capital cannot be made available as assets. How often this is brought to our notice after the death of one of our brothers. His assets amount to a few hundreds or at best a very few thousands of dollars, while his working capital before death could be easily and fairly estimated as a non-transferable capital of many thousands of dollars. The reputed skill, the moral integrity, the business capacity, the persistent efforts, the “personal practice,” of the man in his

prime are practically worth, in some cases, hundreds of thousands of dollars placed at interest at six per cent. per annum. The man owning \$100,000 in money frequently works hard to make this money earn for him an income of six per cent., or \$6,000. The dentist earning \$6,000 from practice, is then, in one sense, worth to his family \$100,000. Twelve thousand a year at six per cent. equals \$200,000.

But the \$200,000 is only a life interest. It is like a gas well which is profitable as long as it flows, and the flow may stop or decrease in quantity at any time. Another point in regard to a dentist's capital (shall we say floating capital?) is that it is at its maximum for about a quarter of a century, at best, or say from thirty to sixty years of age. Few men before thirty years of age have an income of much significance, and by sixty years of age, the work of the average dentist as far as an income-gatherer is over. So that the material wealth of the dentist consists of an *income of money*, for, let us say, thirty years, which income during this period, is sufficient for himself and family, enabling them to maintain a home establishment, affording great comfort and a degree of what we may call quiet elegance. The most successful and business-like dentists, by the exercise of some financial skill, and considerable prudence in the way of expenditure during the period of the thirty years of paying practice, become real owners of the homes of their families, and I use the term *real* owners, because of the frequent and uncomfortable mortgages casting clouds over the clear title of many of these elegant homes believed to be owned by dentists in good practice.

Besides the good income—that is the income which affords the comforts and elegancies of the 19th century, in a scale of society as far removed from the lowest, as it is from the highest grades, the successful dentist is generally the possessor of life insurance policies valued at from 5 to 30 or 40,000 dollars—which his income permits him to maintain and which form the most important part of the effects of the dead dentist who has been a successful and prudent dentist during his years of activity. This is all that I can say in regard to the material wealth of the dentist.

What are some of the other possessions of the dentist which can be added up in the items to his credit? First, I shall mention *morality*. Dentists, as a class, possess this noble quality in a high degree. Morality is a cultivated nerve centre, implanted in the

highest portion of the brain, from which two sets of fibres radiate—the inhibitory and the accelleratory. The numerous inhibitory fibres pass out from the centre and extend to a great variety of terminal points in the brain and to other centres, checking and controlling as with a rein a great variety of thoughts and actions. The accelleratory fibres, on the contrary, extend to the centres of noble and true emotions, impelling them to activity, and “good actions” are the result. This quality of morality is not equally strong in the young. It is, of course, influenced by heredity, as are other qualities, but it is capable of cultivation—it is developed by increased activity of its function, and affected by sundry conditions. The orthodox religious sentiments of the day do not appear to be very powerful irritants of this centre, for religious convictions and enthusiasm do not always walk hand in hand with high morality. The daily life, the surroundings, the occupation itself of the dentist seem to develop healthfully this quality, and therefore I feel justified in adding this as one of the possessions of the dentist. I offer this as the result of extended acquaintance with, and large observation of dentists in this country and in Europe for more than a quarter of a century. Will any one deny it?

There are other items in the possession of dentists which as virtues are frequently grouped together, and which I can here group in the same way. They are *Faith, Hope and Charity*. *Faith*, the dentist certainly has, in the sense that he has faith in his efforts, in his influence, in his work, in the durability of his operations, etc. *Hope*, he must have to enable him to plod on and on, from day to day, in a narrow circle from early morn till night, and then again from morn till night, and still again and again, and again with a smiling face, and a cheerful brow, a shining enthusiasm as wonderful as it is pleasant to see. For evidence, look about you to-day and observe the men of three score years, and then of three score years and ten—listen to their discussions—observe the keen knowledge of their interest in everything that is new in dentistry (McK). Isn't it *hope* that fills their hearts? Hope that things may be brighter and easier in the future than they are now?

Charity—There are two kinds of charity—one the kind which,

“Gently views thy brother man,
Still gentler sister woman,” etc.,

And the other is expressed in the motto, "To sweet charity," and means giving.

It is the latter kind that the dentist has an abundance of. He gives his life, his best efforts, his time, his work, to his patients and thinks but little about the recompense. He is the charitable man in his daily life and work, *par excellence*. Man a man whose time is easily worth from ten to twenty dollars per hour, for every hour that he is in activity, gives hundreds of hours a year away to his friends, his relations and other people who could well afford to pay him for his time. He does it because of his innate *charity*. *Mercy* is an attribute of the dentist. Pointed at as he often is, as he walks the street as the "man who hurts"—surrounded as he is daily in his office with sharp cutting implements of torture—skilled as he is in the use of them—what man, if he were not filled to the brim with *mercy* would not sometimes give way to temper and revenge and hate, and destroy the patients who so often and yet so unwittingly insult him, and suspect his honesty, accuse him of meannesses, etc., etc. "Doctor, please don't make any holes in my teeth," archly cries the young married woman—"Is this poison which you have put in my tooth,"—"All the fillings which you put in have fallen out,"—"My teeth never gave me any trouble till you filled them with the engine." Yet I say these people still live, and it is proof of the possession of this quality of mercy on the part of the dentist.

There are other items which could be added, but I did not promise your committee to write a treatise on the subject. I think I have mentioned enough points to satisfy you of the abounding wealth of the dentist.

THE 'Varsity says: Oxford University is the largest in the world; it embraces twenty-one colleges and five halls. It has an annual income of \$6,000,000.

THE most heavily endowed educational institutions in the United States are: Girard College, \$10,000,000; Columbia, \$5,000,000; Johns Hopkins, \$4,000,000; Princeton, \$3,500,000; and Harvard, \$3,000,000.

THE following are among the largest sums given by individuals in the United States for educational purposes: Leland Stanford, \$20,000,000; Stephen Girard, \$8,000,000; John Hopkins, \$3,148,000; Asa Packer, \$3,000,000 to Lehigh University; Ezra Cornell, \$1,000,000; James G. Clark, \$1,000,000.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

AN IMPROVED FORM OF SAND-MOULDING FLASK.

BY DR. BOOTH PEARSALL.

THE sand-moulding flask has been designed to meet some of the many defects we find in zinc dies as they are commonly made by dentists. This design has been the subject of a good deal of thought for many years, if one can be said to think a new design never put into practice, and I think anything that will aid us in our workroom labor by shortening labor—meaning tensile strength and decreasing waste—is worthy of attention. The sand-moulding flask was invented about eighteen months ago, as an experiment to see how far the Bayley flask and die could be improved upon, and has been in constant use in my workroom ever since it was made. During this time of constant use, the only improvement has been to have two patterns of moulding-plates, one with the cone-shaped aperture somewhat larger than the pattern before you, so as to suit very large jaws. The flask is made of two parts—a moulding-plate and an iron sand-ring made to fit the plate.

The moulding-plate is circular; the upper surface has four concentric grooves on its surface and four projectors or tabs; the grooves are for holding the sand in such a way that the grooves make so many dykes or obstructions to prevent the hot metal running out between the moulding-plate and the surface of the sand surrounding the mould. The concentric grooves have another object, namely, to guide the workman in correctly centering or ex-centering the position of the model, so that the cone or striking part of the die will come where it may be wished to have most strength in the die—in other words, where the heaviest hammering is to be done. On the other side of the moulding-plate are to be found four webs or feet running from the circum-

ference of the plate to the aperture in the middle, which moulds the truncated cone for hammering upon, the object being to make the moulding-plate strong enough to stand rough usage, of sufficient weight to prevent the moulding-plate from floating off the sand mould by the weight of the melted metal as it is poured into the mould, as well as to form steady feet for the plate to rest on in the sand-moulding trough. The iron-sand ring is made of strong hoop iron in the usual way, and it should fit easily and truly on the grooved surface of the moulding-place next to the projectors or tabs.

When sand-moulding is to be done, the moulding-plate is placed in the sand-trough grooved side *upwards*, and on it the shallow plaster model (from $\frac{3}{4}$ to 1 inch deep, as may be desired). The model is either correctly centred by the aid of the grooves, or it may be put out of the centre so as to bring the cone-shaped aperture wherever it may be desired. The position of the plaster model having been determined, the iron sand-ring is put on the moulding-plate surrounding the plaster model. The sand is then packed in in the usual way, and when the packing is finished, the iron ring full of sand and the moulding-plate are turned upside down, the moulding-plate removed, exposing the plaster model, which is then removed by the aid of a point and a hammer in the usual way.

The mould having been examined and any loose particles of sand blown out of it, the melted zinc can be poured into the sand-mould and the moulding-plate put over the mould, and the remaining zinc poured in to make the coned end of the die. If the sand-mould is not quite filled with zinc, there will not be any difficulty in placing the moulding-plate on the sand-mould, but if the metal is poured in a slovenly way, there is no doubt that a difficulty will occur, the over-flow of metal preventing the moulding-plate from going into its place. With skillful workmen and ordinary care, the pouring of this die is just as easy as any other form.

In use, the swaging of a plate will be found more certain and accurate because of the case with which heavy blows can be struck on the truncated cone, and if the section of a die be examined, the hollow formed by the cooling of the zinc in the centre is really a source of strength, so far as the construction is concerned.

The cone-shaped end, with the model projecting over it, enables the die to be held in a vise in such a way that blows struck on the palate or teeth of the model will not cause it to slip in the jaws of the vise, but has a steady bearing, forming a great contrast to the slippery and uncertain hold of the ordinary form of die when placed in a vise to be filed or hammered, and it can be easily turned round when the jaws of the vise are opened, and instantly tightened again in the desired position, whereas the Bayley or ordinary form of die cannot be secured with the same certainty, precision, or rapidity in a vise. You will also notice the ease with which blows can be struck outside of the cone on the shoulder formed by the projection of the mould under the cone, and such blows are often of the greatest service in certain cases, the instances of which will readily occur to practical minds.

The advantages may be summed up as follows:

1st. Saving in the amount of metal to be melted, as zinc deteriorates by constant melting; this is important, as the usual supply of zinc ought to go farther in the constant use of smaller dies.

2nd. The ease with which a shallow plaster model can be removed from the sand as compared with a deep one.

3rd. The great increase of strength, owing to the improved construction of the die, aided by the cooling of the zinc.

4th. The ease and rapidity with which the new form of die can be held in the ordinary vise.

5th. The certainty of blow secured by the use of cone-shaped end of the die.

6th. The choice offered to the workman in placing the strength or blow-resisting cone where it is needed to resist heavy hammering.

7th. The ease with which the hammer surface of the die can be struck with a heavy hammer.

8th. Simplicity of method, the details being nearly the same as those used in the dental workroom.

In diagram No. 5 you have sections of the same model used as a die in my method, the usual method, and that invented by Bayley. I have to inform you that manufacturers, so far, cannot see any advantage in my method, and one firm have generously offered to *connect my name with the invention* if I will place my invention in their hands without any remuneration for the cost

of experiment and wear and tear of brain substance, and they have informed me that I shall have great difficulty in converting dentists to the use of my form of die. That there is great scope still to be found in the improvement and increased efficiency of workroom tools, I have no doubt, and I hope from this time forward to do something to make our workroom places where work shall be an enjoyment, not a sorrow. Whatever may be said about American inventions, and the appreciation shown whenever any good and practical invention is placed in the hands of our profession, I do not think the British dental manufacturer can lay claim to any credit in promoting or fostering inventions of any kind amongst us until the demand for the newer and more efficient appliance of the men of progress has become so marked on the part of dentists that they cannot avoid "going with the times." I do not think the difficulties and inconveniences found in connection with the forms of metal dies have been sufficiently studied by practical dentists; and I trust you will find, by practical experiment, that I have done something towards making dies something less of a worry and something more of a pleasure than they have been found in the past.

LABORATORY HINTS.

IN mechanical dentistry, I have been using Teague's Impression Compound, and think it is better than plain plaster for taking impressions, especially where there are teeth remaining.

I always keep, ready for use, a 6 oz. bottle of potassa alum-water; made by adding two or three teaspoonfuls of the potassa-alum to the bottle of fresh water. Use equal quantities of this and fresh water for mixing your plaster. It hardens the plaster, and keeps it from shrinking; and after vulcanizing, your plaster will not stick to the rubber.

To save time in taking an articulation, for a full set of teeth: After the impressions are taken, use a small wood peg on the anterior alveolar ridge, and get the width needed. After your models and trial-plates are made, lay soft wax on the plates and press them down on some flat surface, and trim them. Now, take off your models and place them together, as they should be, in the mouth, and take a pair of callipers and place one end over the trial-plates, and use the other on the peg, and trim the wax,

until both agree in length, etc. When placed in the mouth you will need only to contour the wax to conform to the shape of the face.

After completing a full denture: Before inserting, and to save much after-annoyance, it is better to explain—especially to old persons—that their teeth will not stay in tight enough to eat with, by the suction; and that the suction (so-called), is only the adaptation of the plate to the ridge, etc., and that the plates are made useful, only by the contraction of the buccinator muscles, which holds them firmly while eating. Show them how, by laying your finger under your cheek, and using the muscles. This is the main cause why old persons have so much trouble with artificial teeth. Age has deteriorated the usefulness of the muscles. I know many patients that could do nothing with their plates until I had trained them to use these muscles.

In extracting teeth for very nervous persons, I find that sulphuric ether, used on a small piece of sponge, and rubbed on the face, near the lobe of the ear, quiets them, and appears to lessen the pain. This is good, in conjunction with electricity; but, don't use it too often on the same patient.

In extracting teeth for a full upper denture, the canines are the most stubborn; but, after taking out all the other teeth, if you will catch them on the sides, well up on the cervical border (cutting through the alveolar process), you will have no trouble.—DR. A. D. PENNEY in *So. Dent. Jour.*

A RAPID METHOD OF MAKING A GOLD PLATE.

DR. MICHAELS: In half an hour he made a gold plate of four teeth, the time for the setting of the plaster not being counted. The author uses a special gold plate, which is very thin and pliable; it can be worked like sheet-lead. The sheet-gold is smooth on one side and quadrilated or roughened on the other. A good impression must be obtained with gutta-percha. In this impression he runs a mixture of two parts plaster to one of sand, and obtains a model about an inch in height. He then adjusts on this model the teeth as well as the clasps; when a clasp is well adjusted, he tightens it somewhat, and pushes it with force into its proper position, so that it cannot be displaced. When the clasps are in place he takes a piece of sheet-lead and

cuts it according to the shape he wants to give to the piece, and having marked the upper surface, he places it on the gold plate described above, and cuts a piece out according to the pattern. He then takes this piece of gold and places it in position, the smooth side of the plate in contact with the plaster, while the roughened or quadrilated surface looks upward; this is adjusted into position with a good burnisher or other similar instrument. To retain this plate in position he drives little nails about half an inch in length by the side of it into the plaster, and with a pair of pincers he turns the ends of them so that they press on the plaster surface and render the plate immovable. The teeth are then placed again on the model and plate, and retained in position with hard wax. He then invests the teeth and model in a plaster and sand mixture, while the wax is washed off with boiling water; of course, the whole upper quadrilated or roughened surface must be left exposed, as it is by running solder all over this plate that he obtains the desired thickness. When the plaster is dried, all the spaces that may be left between the plate and backings of teeth or clasps are filled with small scraps of platinum foil made into pellets and pushed into position. After the whole surface and backings have been well covered with borax, the piece is ready for soldering.—*Cosmos Report Int. Congress.*

PREPARING ROOTS FOR CROWNING.

It seems to me that as fine a joint cannot be made with any sort of a cap that can be put upon a tooth as is the joint made by putting a gold filling on the end of the root. Finish the filling perfectly, then set the crown on that, and the operation will be as lasting as anything that can be made. In that way the root can be saved, and if anything breaks it will be the crown, which should always be the weakest, and which is easily replaced. If I set a thimble, as of course it is necessary to do on a frail root that may split easily, I bevel the end and having fitted my band, cap and pivot, and having soldered the three together, I drill one or two vent-holes through the cap. After this thimble is set, I fill the vent-holes with gold and then proceed to fit and set the tooth on the projecting pivot. When the tooth is set in this way, the excess of zinc phosphate does not go down between the band and the tooth at all, but comes out through the vent-holes drilled

through the cap, and allows the whole structure to go to its intended place.—DR. PERRY.

ATMOSPHERIC PRESSURE.

DR. W. B. AMES, of Chicago, demonstrated by a practical case his method of securing retention of entire artificial dentures by atmospheric pressure. The patient had a flat mouth, but there was a wonderful degree of retention. The plate was extended posteriorly and toward the reflected tissues of the cheeks and lip far enough to give slight displacement of soft tissue by its entire periphery. Under these conditions there is retention by adhesion of contact until the force applied becomes sufficient to overcome this adhesion. When this occurs, there is a tendency to the formation of a vacuum beneath the plate, because of the displaced soft tissues being in contact with the edges, preventing the entrance of air beneath. With this form of plate the retention by atmospheric pressure is manifested only when a force that tends to displace the plate is sufficient to overcome the adhesion between the two surfaces.—*1st Dist. So. Report, Cosmos.*

A LABORATORY HINT.

DR. T. F. CHUPEIN says: When filling the upper ring of a flask—in repairing vulcanite work, it will generally be found that a large airhole is frequently formed in the plaster just poured in. This is caused by the plaster in the lower ring being dry and the air escaping from it forms the airhole. To avoid this, after the case is invested in the lower part of the flask, trimmed, bevelled and varnished ready for the investment of the upper ring, grease the whole surface and place it in a bowl of water while you mix the plaster for the upper ring. By this manipulation you will avoid what at times is very tantalizing in repair cases. The same procedure may be observed for new cases as well as repair cases.—*Off. & Lab.*

PLATE TEETH FOR RUBBER BASE.

IF plate teeth are used in partial sets on rubber base, bending the pins so as to form hooks or loops, and allowing the rubber to extend nearly to the cutting or grinding surface of the teeth to

form a backing, there will be no complaint of loose teeth. The writer has tried both the rubber and plate teeth in his own mouth, as well as in his practice, and is thoroughly convinced.—
DR. J. G. CHISHOLM, *So. Jour.*

Editors' Specials.

"Write the Vision and make it plain."

HISTORIC REPETITION.

In the early autumn of 1852 the present writer met with the Mississippi Valley Association of Dental Surgeons. Not many members were present. Among them were Drs. James Taylor, Charles Bonsall, A. M. Hunt, A. M. Leslie, W. H. Goddard, J. Taft, and a few others as members, and the writer and Dr. John G. Hamill as visitors. Hamill and the writer did not get there till the second day; and it seems that the President, in the opening address, expressed some discouragement as to the lack of interest, as manifested by the slim attendance. On his suggestion a committee was appointed to inquire the proper course of procedure under the circumstances. The committee consisted of Drs. W. H. Goddard and A. M. Hunt who advised to disband the association. In other words a *sine die* adjournment.

And now the president, in view of the evident indifference, suggests an abandonment of the association. Now, as then, the suggestion met with decided opposition, and, as before, the proposition was referred to a special committee of two, consisting of the President, Dr. Callahan, of Hillsboro, Ohio, and Dr. McKellops, of St. Louis. At this writing we have not seen the report of the committee.

Dr. A. M. Leslie was chairman of the committee on membership, and ascertaining that Dr. Hamill and the writer were opposed to disbanding, he urged to become members, and soon after, the committee asked leave to withdraw the report, which was granted. And then the good old Association began a career of usefulness such as had not been witnessed, and it is doubtful if the like has been seen since.

Since beginning this we learn that the old precedent was

followed. The President and Dr. McKellops were appointed a committee of inquiry, and again the treatment for the barren fig tree, in the parable, is adopted. "Lord, let alone for this year also, till I have digged about it," etc.

Now if the soil is not too far exhausted, we have great hopes from the digging process. We only fear that it will not be thoroughly tried. A fair supply of old-fashioned compost, in the shape of good, carefully prepared papers, and an abundance of patent fertilizers, in the shape of good clinics, will prove excellent at the meeting, but the digging must not be neglected. In other words, the way to have a good meeting is to prepare for it beforehand. It will not do to wait till the Secretary's notice of the meeting is received, and then recall the fact that you are to prepare a paper for the meeting, and go at it haphazard hoping it will come to something. And that it shall come to grief is as cheerful a hope as is warranted, under the circumstances.

We imagine that we feel in our bones that the association is going to revive and flourish again, but possibly it is neuralgia. But a hint or two as to its former revival may illustrate the kind of work that is wanted at present. At that date we will venture to state that topical remedies were used empirically. Few operators know the action of the simplest remedy; and few cared to know. The action of those most commonly in use was placed among the "subjects for discussion," by the lamented J. Douthett, a recent graduate, who was a member of the executive committee.

The present writer concluded to describe the action of some of them on "inflamed dentine" in a paper. The paper was begun about the 1st of April, 1856, and was not concluded till July. It is not meant that all our time was given to it, but most of our leisure time was. Sometimes after a sentence had been begun, two weeks, or more, of experimenting in the laboratory, were required before we could finish it. Such was the labor bestowed on this document; and with all the progress in dental science it is not bad reading yet. Others, we have no doubt, were equally thorough in preparation. We speak of this in detail to show the kind of effort that brought up the association before; and it matters not that the paper referred to was read at the American Dental Convention. It was called out by the association.

If similar effort is put forth, we will see another revival, but

it will not run itself and prosper. Though we have not had the pleasure of meeting with the Association for years, we cherish a warm feeling for it.

MISSISSIPPI VALLEY DENTAL SOCIETY.

THE 46th annual meeting of this, the oldest dental society in the world, was held at Cincinnati, March 5, 6 and 7, 1890. The attendance was very good considering the late preparations for the meeting and that no notices were sent for publication in the various dental journals.

Dr. J. R. Callahan read his address* which was followed by quite a spirited discussion especially regarding that portion of the paper mentioning a possible retrograde movement of the society. The outcome of this discussion was a resolution to appoint at least one member in each city where they were represented, to use his influence toward getting a good attendance at the next meeting and to make a special effort to bring the society up to the standard and prominence it deserves.

Dr. Otto Arnold, of Columbus, O., presented a paper on The Non-Metallic Plastic Materials for Filling Teeth.† The discussion brought out the usual disagreement regarding the proper material for and method of root filling. Cases were cited where cement fillings had perfectly preserved the teeth from ten to thirty years, but the general conclusion was that these materials should be used only for temporary purposes, except as root fillings, as they disintegrate, especially at the cervical margin, after a comparatively short time.

Dr. J. Taft, Cincinnati, read a paper on Inventions and New Things‡ setting forth as usual, some solid thoughts for the profession's earnest consideration.

Dr. C. M. Wright, Cincinnati, told the society all about The Wealth of the Dentist. If you wish to know how rich you really are read his paper on page 172.

Dr. L. A. Anderson, Cincinnati, gave an interesting talk on Veterinary Dental Surgery and Operative Dentistry. The assembly looked wise but offered no discussion on the subject.

* See page 158 this issue OHIO JOURNAL.

† See page 153 this issue OHIO JOURNAL.

‡ See page 161 this issue OHIO JOURNAL.

The Secretary read a paper on Professional Ethics and Honor* from Dr. W. Storer How, Philadelphia, who was unable to be present at the meeting.

Dr. M. H. Fletcher, Cincinnati, explained his system of crown and bridge-work which embraces a number of new and good ideas. We are sorry it was not given in the form of a paper so that our readers might get a full conception of the system.

EXHIBITS.

The Chase Metallic Combination Dental Plate was exhibited by Dr. A. S. Billings, of Omaha, Neb.

This plate is an effective combination of metal and rubber or celluloid, and consists of a swaged plate of either gold, platina or aluminum, covering the palate, to which the teeth are attached with rubber or celluloid; the method of attachment being peculiar but simple.

The advantages claimed for it are:

1st. A thin, metal plate, with its non-heat-retaining quality.

2d. Covering only the palate, it is easily swaged by the use of Babbit metal dies.

3d. The method by which the rubber or celluloid is attached to the plate is such that it cannot be detached by wear.

4th. All that is necessary to change the temporary to a permanent plate is to remove the rubber or celluloid, and on a new model make a new attachment of rubber or celluloid.

5th. By means of this method, the dentist can furnish his patients with a denture, which, while it is not equal in value to a complete gold or platina plate, is far preferable to a rubber plate.

6th. The use of this method is a stepping-stone for the dentist to the introduction of metal work into his practice.

7th. The ease with which the dies are made by the use of Babbit metal and oiled sand, makes this method of constructing dentures simple and easy.

Dr. Billings also demonstrated the superiority of their molding sand. It certainly gives the smoothest and sharpest cast of any we have seen, and is easily worked. This sand will soon be on the market and for sale by all dental depots.

New Cord Dental Engine, manufactured by the S. S. White Company was on exhibition.

* See page 165 this issue OHIO JOURNAL.

Improved Bonwill Mechanical Mallet.—Dr. H. J. McKellops, of St. Louis, showed his modification of this mallet which does away with the hand-piece attachment. The mallet is attached directly to the new cord engine which dispenses with that objectional hanging weight of the present mallet.

The Custer Pneumatic Mallet was shown by Dr. L. E. Custer, of Dayton. This mallet, like other pneumatics, requires foot pressure on a rubber bulb which forces air through a connecting tube with force enough for any kind of a blow required. A great improvement of this over other mallets of its kind is that the blow is reversable and either the direct or back action stroke can be made at will. The mallet also carries both automatic and cone-socket points. It is certainly the best of its kind and we hope to see it on the market soon.

The Byrnes Engine Mallet was also exhibited. The mallet shown was a modification of the regular form in that the stroke was shortened so that the point can be carried directly on the gold and the filling perfectly condensed without danger to frail walls or chipping of the borders as with a long stroke. The spring is also stiffer and the blow more exact and harder when full force is used. The blow can be softened down, however, to any degree desired. An admirable point is that by merely reversing the engine a lighter blow is given, and another that it can instantly be thrown out and back into gear. The mallet is simple in construction, not liable to wear, easily kept in order and condenses gold beautifully. With the great improvements in these engine mallets and the rapidity with which they condense gold they are sure to greatly replace the automatic and hand mallets now so generally used.

Dr. McKellops also displayed new shaped excavators, chisels, plugger points, Darby's new matrix retainer, Foster's separator, corundum and rubber plug finishers, designed especially for fissure fillings, etc., etc.

The Elliott separator and Ivory matrix retainer were also shown to the society.

The next meeting will be held at Cincinnati in March, 1891, and a special effort made to make it the best meeting yet held.

The following officers were elected for the ensuing year: President, M. H. Fletcher, Cincinnati; 1st Vice-President, L. E. Custer, Dayton; 2nd Vice-President, Otto Arnold, Columbus;

Treasurer, Frank Hunter, Cincinnati; Rec. Secretary, H. T. Smith, Cincinnati; Cor. Secretary, H. C. Matlack, Covington, Ky.
B.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

GOLD RETAINER.—DR. F. E. HOWARD'S method of adaptation of gold in filling cavities on the buccal surfaces of teeth which are extremely sensitive, is to apply a varnish made of chloroform and balsam of fir, and then built a gold filling on it.

CEMENTS.—Before filling teeth with any of the preparations of cement, wipe the cavity out with aromatic sulphuric acid; full strength. This by removing any trace of oils which might be present, causes the cement to adhere with great tenacity to the walls of the cavity.—*So. Jour.*

DECIDEDLY SO.—Filling roots permanently with cotton is a reprehensible practice. Neither do I think any other vegetable material a safe thing for root filling, especially in teeth of young persons, or teeth of soft structure; such materials, in such cases, absorb moisture and become septic. They may be used with a degree of permanent safety in teeth of the middle-aged or in teeth of hard structure.—B. H. C. in *So. Dent. Jour.*

USEFUL PLATE FOR HOLDING ODD PIN PLATE TEETH.—Cut a piece of linoleum floor-cloth into three or four inches square. Before inserting the teeth slightly beat the linoleum and the pins will go in easily. I have found this method of fixing odd plate teeth much superior to wax or gutta-percha and is more durable and cleanly. New teeth can be inserted in the place of those used. The very thickest cloth must be used, as the length of pin makes this necessary.—*Jour. Brit. Asso.*

HEAT APPLIER.—Talc or soapstone points, in an ordinary crayon holder as a handle, I find very useful as a means of applying heat to hasten the setting of cements in crown-work, and whenever cement is used, also as an aid in diagnosing dying

pulps, etc. The mass of soapstone when heated to a proper temperature, retains the heat much better than steel instruments. The points are readily shaped to any desired form and size with a vulcanite file and sandpaper.—DR. GILLETTE.

LOCAL ANÆSTHETIC.—

R	Cocaine Mur.	-	-	-	gr. 50
	Acid Boracic	-	-	-	gr. ii.
	Liq. Hyd. Bichlor	-	-	-	m. 40
	Aquæ Destil ad.	-	-	-	m. 250

Soak two rolls of cotton wool well with the solution, holding them in position for about two minutes, then operate with warm instruments.—DR. E. M. TOD.

TIMELY HINTS.—Reading presents to the mind many theories; discussion helps to obtain facts; clinical instructions are seldom forgotten. Society membership is indispensable, socially, professionally and protectively. In a literary way, read and take notes, reflect and record facts. In operating, regard each tooth as a patient, diagnose physiologically, prescribe with chemical adaptability, manipulate with mechanical accuracy, and there will be “no such word as fail.”—DR. S. B. PALMER in *Int. Jour.*

LET US HAVE FACTS.—I do not like the study of anything which is so uncertain as the subject of pathology. In the medical world we find men who have spent their whole lives in establishing theories, and some other fellow comes along and knocks them over. We want something that is more reliable. I am glad somebody is investigating these subjects, yet there is not much to be glad about. When one pathologist knocks out the theories of another, I begin to wonder sometimes whether we are ever going to have some things which are at present in dispute, definitely settled.—DR. J. N. CROUSE.

CORAL AS A FILLING MATERIAL.—DR. GUERINI takes a piece of coral and shapes the end of it to the size of the carious cavity. He then cuts a groove around it immediately above the point where he wants the piece to break off. He then introduces cement in the cavity, and places the piece, which is not yet detached and which he holds like a pencil in his hand, in the cavity; he keeps it there until dry; then the slightest lateral motion

separates the small piece, which is retained in the cavity, from the large piece; the whole surface is then equalized with a corundum-wheel, and the operation is complete.

TO CURE BROMIDROSIS.—Sufferers from foetid sweating will be glad of the following formulæ.—For ill smelling feet: after carefully washing the feet, which should be done night and morning, apply an alcoholic lotion, methylated spirit and water, and then turning the socks inside out powder them thoroughly with the following: Talc 40 parts, Bismuth Subnitrate 45 parts, Permanganate of Potassium 13 parts, and Salicylate of Soda 2 parts. For perspiration from the axillæ, etc., Powdered rice 60 parts, Subnitrate Bismuth 25 parts, Permanganate of Potassium 10 parts, powdered Talc 6 parts.

TREATMENT OF PUNCTURED ROOTS.—In filling teeth or roots of teeth in which the walls have been punctured either with a drill or from decay, take a piece of pure gold rolled very thin, form it in the shape of a small cone the size of the canal to be filled. Push it, small end first, as far up the canal as you can, then with a smooth tapering instrument burnish it carefully against the walls, after which fill with cement, packing it in very hard, so as to force the sheet of gold against the walls, making a close adaptation. Roots which are so badly decayed as to have several openings in the sides can be filled in this way with perfect success.—*So. Dent. Jour.*

THE USE OF NON CONDUCTORS BEFORE INTRODUCING A FILLING.—To prevent the inflammations which are to be so much feared when a filling is placed too near the pulp, Dr. Michaels advises that under every filling a non-conducting substance should be placed. He recommends “paraffined asbestos,” prepared by taking asbestos paper and passing it through the alcohol lamp; when the cellulose has been destroyed, he covers it with a layer of heated paraffine. This preparation is indestructible and an excellent non-conductor. In addition to this non-conductor, he always applies around the cavity semi-fluid hypophosphite of calcium, which in time is transformed into calcium phosphate.

TRY IT.—Cement your porcelain slab, on which to mix cement, to a piece of marble $3\frac{1}{2}$ by 4 inches, 1 inch thick; it is

neat, will give it sufficient weight to keep it from sliding about when in use, and will keep it cool in hot weather. Drill small hole in marble into which cement a small instrument scraper, if desired.

Save your broken burs; grind them to a wedge-shape, with square edge, or to any shape desired, there will be a variety of sizes and will be of as much service as new drills, and answer the same purpose in every respect.—W. H. BENNETT in *So. Jour.*

WINCHELL'S PASTE.—According to the *Popular Science News*, Professor Alex. Winchell has a cement that will stick on any thing. The recipe is as follows: Take 2 ounces of clear gum arabic, $1\frac{1}{2}$ ounces of fine starch and $\frac{1}{2}$ ounce of white sugar. Pulverize the gum arabic, and dissolve it in as much water as the laundress would use for the quantity of starch indicated. Dissolve the starch and sugar in the gum solution. Then cook the mixture in a vessel suspended in boiling water, until the starch becomes clear. The cement should be as thick as tar, and kept so. It can be kept from spoiling by dropping in a lump of camphor, or a little oil of cloves or sassafras. This cement is very strong indeed, and will stick perfectly to glazed surfaces, and is good to repair broken rocks, minerals, or fossils.—*Off. and Lab.*

MANIPULATING PIANO WIRE.—I would like to say a word or two in relation to the manipulation of piano wire. I don't know whether it is generally known or not that it can be soldered into almost any shape without interfering with the temper. Two pieces can be firmly united by wrapping with a few turns of fine binding wire, over which soft solder is flowed with as little heat as possible. It is best to use muriate of zinc to make the solder flow easily. In this way you can make almost an innumerable variety of shapes. You can solder on any sort of a shape of copper, or any metal that rubber will vulcanize around. Rubber will not vulcanize around steel unless it is tinned or covered in some way, and it is a very easy matter to tin it. The method which Dr. Jackson advocates for preventing the clasps from slipping off the teeth is to cement on thin bands of platinum, with a fine wire soldered on, so as to make a slight prominence for the wire to rest against, but over which it will not easily slip.—DR. CLAPP, *Archives*.

COAGULANTS AND NON-COAGULANTS.—DR. A. W. HARLAN demonstrated the action of coagulants and non-coagulants on egg albumen. These experiments were undertaken to show, first, the coagulating properties of carbolic acid, creosote, resorcin, alcohol, peroxide of hydrogen, chloride of zinc, 1 to 1000 solution bichloride of mercury, guaiacol, aromatic sulphuric acid, and synthetic carbolic acid; also to demonstrate the non-coagulating properties of the following-named drugs: oil of cassia, oil of gaultheria, oil of camphor, oil of cajuput, tereben, myrtol, eugenol, oil of cloves, eucalyptol, ethereal solution of iodoform, terpinol, oil of sassafras, and a few others. Dr. Harlan stated that non-coagulants were the ideal medicaments to be used for disinfecting pulpless teeth, on account of their non-coagulating properties. When introduced into the root-canal they would not cook a serous exudate, or pus flowing from a blind abscess into the canal, whereby the delicate canals would be filled with cooked albumen, clogging them and preventing the introduction of fine instruments. When a coagulant is used under such circumstances, albuminous matters, filling the root or draining through the root, are inevitably cooked at once, thereby rendering the removal of the coagulated albumen from the delicate canals a matter of impossibility. This was very satisfactorily demonstrated by experiments made before the spectators, and in every case where non-coagulants were used it was shown that they remained in contact with the albumen product without any coagulating effect.—*1st Dis. N. Y. So., Cosmos.*

DENTAL HINTS.—A paper read before the Southern Illinois Dental Society by DR. A. D. PENNEY: There are many "Hints" in our daily practice, which, if gathered up, might be useful to some one—every one has a wrinkle of his own that may be a *little better* than others.

In our offices. How many have a suitable light to operate by without injury to eyesight? To overcome a defect in the light in my operating room, I use a jeweler's shade—and it is "Eureka."

How many dentists use the large hand magnifying glass, in conjunction with the mouth mirror, to examine fillings, cavities, etc.? I assure you, its use will decide the cause of many of our failures, and help us to success.

Cleansing and polishing teeth.—To remove the tartar, I use

thin, springy-curved chisels, resting my fingers on the teeth, using the mellet, with hand, or the assistant (the assistant is best), with quick, sharp blows; very little, if any, wounding of the gums is caused. In polishing, I use peroxide of hydrogen, in conjunction with powders, etc., and use the engine.

In tying on the dam, we often have teeth that cause trouble and loss of time to get the string to stay in position. I daub a little copal-ether varnish on the first knot, then use my chip blower, and tie the other. This is also good for holding a refractory clamp—that will fly off—use spunk with it. After your dam is in position, with most patients, there is an excessive flow of saliva, caused, mostly, by the contact of the rubber on the tongue and lips—this is always annoying. To avoid this, I use a napkin holder, of my own make; fold a napkin once, draw it up under the rubber and fasten it over the head. Your patients will bless you, for the relief and comfort.

In filling teeth with gold, where the cavity extends well up on the cervical border, I use felt tin foil for the portion above the gum margin. In filling large and well defined proximal cavities, I have been using Steuers and Sibley's Felt Gold, which don't require more than half the time to condense by hand pressure, as other forms with mallet, and appears to make quite as satisfactory a filling.

In filling teeth with amalgam, I have always used the round points, with rotary motion; for years I have used spunk in a pair of tweezers, to consolidate, but find that a set of spunk pluggers are the best. Take a number of old burs, fold over them spunk, and tie it.

In filling all proximal cavities, where there are two opposite, I bridge them; if only one, I brace it against the other tooth, and separate and finish at the next sitting. If bicuspid I *always* extend the filling across the crown; it is best, with *any material*. Two-thirds of the chewing done, is upon the bicuspid, and they *must be filled* on the grinding surface, to save them.

When your amalgam plug is completed, *let it alone*; don't wiggle at it *here and there*; you can't improve it until it hardens; and you give the fluids a chance to enter when you touch it. Again, when you use the dam, be careful to draw out the strings, and take off the dam carefully. I am satisfied many a good operation is spoiled right here; as the cervical border can be so

scored, that it is bound to decay. A last thing about amalgam, there is no such thing as the bulging out of the filling, due to bad material used; this is caused by an excess of material not being cut off and finished properly. In filling with cements, oxychlorides, etc., as a permanent plug, I mix well, run a small portion into the cavity, and work the rest into a stiff paste, and take it in the fingers, and roll it into balls, and fill with oiled pluggers. I have them good now, that have stood three and five years.

In filling children's teeth, I use amalgam, and bridge all proximal cavities—in back teeth—and leave them this way; but, if the child is old enough to admit the use of the dam, I prefer cement, for the front teeth.

In filling the fangs of teeth, there is nothing better than *pure whalebone*; if properly trimmed, it can be forced into the canal, where anything will go—use it with chlora-percha.

I think, where there is any portion of a crown left, from the second bicuspid back, there is no more permanent plan of restoration than a gold band, filled with amalgam.

In capping aching teeth (so-called): Wash out with warm water, stop the pain with oil of cloves and carbolic acid (equal parts), clean out decay *around the sides*; cut a piece of asbestos paper to fit the cavity, saturate with carbolized resin, and lay in the bottom of the cavity; cover it with wax—*no pressure*. Sometimes phenol and Canada balsam is better.

To remove a diseased pulp, that is sloughing, without breaking in pieces, I use peroxide of hydrogen in the cavity, on cotton for a few days.

To prepare an abscessed tooth, that has had a fistulous opening: Wash out well (as above); use cotton saturated with camphophenique, and close tightly with rubber plug for one week, and it is ready for any other filling.

In treatment of exposed pulps (I have no faith in capping them): Nine-tenths of those so treated are sure to be an after-trouble to us, or some other brother. In operating on all such teeth (with single fangs), I deluge the pulp with a preparation of carbolic acid and oil of cloves; enlarge the orifice towards the fang, and take an orange wood stick, trim down fine, soak in creosote, and drive into the fang; often the pulp will spring out; fill immediately. I have never had any after-complaint; I have used this plan for years.

In regulating teeth, there are so many appliances and changes, expenses and pains, that the majority of people won't have any of it. To do something for these people, I have for a number of years, practiced a method, which I call "finger regulating." Use your thumb and finger, or both thumbs, and press and turn the teeth the way you want them. Instruct the patient and parents, and impress upon them that this is necessary three or more times daily; of course, you will need to extract some teeth, but they don't care, so they save the "chink" and pain; you can also improve the V-shaped arch by this method.

If children cause the front teeth to project by the continuous friction of the tongue (which they do), and we can change the shape of shrubs and plants, by twisting and bending them every day, why can't teeth be regulated this way? Don't condemn this plan, untried—go home and give it a fair trial and report at the next meeting.—*So. Dent. Jour.*

Societies.

"Wherewith one may edify another."

MEETINGS.

Alabama Dental Association meets annually. Next meeting at Birmingham, on the second Tuesday of April, 1890.

Kansas State Dental Association. Next meeting will be held at Topeka, April 30, 1890.

Iowa State Dental Society meets annually. Next meeting in Dubuque, on the first Tuesday in May, 1890.

Texas State Dental Association meets in Buton, first Tuesday in May, 1890.

Northern Ohio Dental Association meets annually. Next meeting at Canton on the second Tuesday in May, 1890.

Georgia State Dental Society meets second Tuesday in May, 1890, at Tybee.

Illinois State Dental Society meets at Springfield, second Tuesday in May, 1890.

Nebraska State Dental Society meets annually. Next meeting third Tuesday in May, 1890, at Beatrice.

The Dental Society of the State of New York meets annually on the second Wednesday in May. Next session at Albany, May 8, 1890.

Kentucky State Dental Association meets annually, first Tuesday in June, 1890. Next meeting in Louisville.

Michigan State Dental Association meets annually. Next meeting at Jackson, June 3, 4 and 5, 1890.

Indiana State Dental Society meets next in Indianapolis on the last Tuesday of June, 1890.

North Carolina State Dental Society meets in Wilmington, on the fourth Wednesday in June, 1890.

NORTHERN OHIO DENTAL ASSOCIATION.

THE thirty-first annual meeting will be held in Canton, Ohio, Tuesday, May 13, 1890, at 10 A. M., and continue its sessions three days. A cordial invitation is extended to all the profession.

SUBJECTS FOR DISCUSSION.

1. Combination Fillings: Their Value and Where Indicated.—Paper by Dr. Chas. R. Butler, Cleveland; opened by Drs. S. B. Dewey, Cleveland, and F. S. Whitslar, Youngstown.

2. Prosthetic Dentistry of To-day.—Paper by Dr. Geo. H. Wilson, Painesville; opened by Drs. F. Creager, Fremont, and J. E. Phelps, Chagrin Falls.

3. Causes of Recurrence of Decay of the Teeth.—Paper by Dr. J. G. Templeton, Pittsburg, Pa.; opened by Drs. W. H. Whitslar, Youngstown, and J. R. Bell, Cleveland.

4. Care of Children's Teeth.—Paper by Dr. E. J. Waye, Sandusky; opened by Drs. E. J. Douds, Canton, and W. H. Fowler, Painesville.

Incidents in Office Practice. Let every one report their interesting cases.

CLINICS.

1. Setting a Dewey Crown. Dr. J. E. Robinson, Cleveland.
2. Barnes' Dental Matrix Clamp, etc. Dr. H. Barnes, Cleveland.

3. Approximal and Crown Filling with Gold, using Dr. Barnes' Matrix. Dr. J. R. Bell, Cleveland.

S. B. DEWEY, *Cor. Sec'y.*

J. STEPHAN, *Pres't.*

OHIO VALLEY DENTAL SOCIETY.

THE tenth quarterly meeting of the Ohio Valley Dental Society will be held at the office of Dr. E. C. Chandler, No. 416 Market St., Steubenville, Ohio, on Tuesday, April 8, 1890, at 2 o'clock, P. M. Come prepared to make the meeting a successful one.

PROGRAMME.

Operative Clinic, Dr. H. H. Harrison. President's Address, Dr. Chas. E. Mason. Essay—"Random Shots," Dr. Will H. Hall. Essay—Voluntary, Dr. E. C. Chandler. Question Box—Questions that may occur to members at the meeting, to be answered by members called upon by the President.

F. S. MAXWELL, *Sec'y.*

MICHIGAN DENTAL ASSOCIATION.

THE thirty-fifth annual meeting will be held at Jackson, June 3d, 4th and 5th. Every effort will be made by the Executive and Local Committees to make the coming meeting both interesting and instructive. The usual reduction will be secured at hotels and upon railroads, and everything done to make a profitable and enjoyable occasion. The Committee cordially invite your presence. It is expected that prominent men in the profession from other States will be present at the meeting.

WM. CLELAND, *Sec'y.*

KANSAS STATE DENTAL ASSOCIATION.

THE nineteenth annual meeting of the Kansas State Dental Association will be held at Topeka, Kansas, Tuesday, April 29th, continuing four days. A program of unusual interest is assured, and the railroads have granted a one and one-third fare rate to those attending.

E. E. ESTERLY, *Sec'y,*
Lawrence, Kansas.

MINNESOTA STATE DENTAL ASSOCIATION.

THE Minnesota State Dental Association will hold its seventh annual meeting in Minneapolis, Wednesday, Thursday and Friday, July 9, 10 and 11, 1890.

M. G. JENISON, *Cor. Sec.*

ILLINOIS STATE DENTAL SOCIETY.

THE twenty-sixth annual meeting of the Illinois State Dental Society will be held at Springfield, beginning Tuesday, May 13th, and continuing four days.

GARRETT NEWKIRK, *Sec'y.*

Books and Pamphlets.

THE INTERNATIONAL MEDICAL ANNUAL and Practitioner's Index for 1890.

Edited by P. W. Williams, M.D., Secretary of Staff, assisted by a corps of thirty-six collaborators—European and American—specialists in their several departments. 600 octavo pages. Illustrated. \$2.75. E. B. Treat, Publisher, 5 Cooper Union, New York.

The eighth yearly issue of this handy reference one-volume manual is at hand. In its Alphabetical Index of New Remedies and its Dictionary of New Treatment it richly deserves and perpetuates the well-earned reputation of its predecessors. In this volume its corps of department editors has been largely increased, and important papers upon Thermo-Therapeutics, Electro-Therapeutics, Sanitary Science in city and country, and the Medical Examiner in Life Insurance are features of special interest. It is truly a helpful volume, a *resume* of the year's progress in medicine, keeping the busy practitioner abreast of the times with reference to the medical literature of the world. While there is a generous increase in size and material, the price remains the same, \$2.75.

ANNOUNCEMENT.—CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY. Edited by B. H. Catching, D.D.S. Sold only by subscription. Price, \$2.50.

This work will be a compilation of all the practical matter of the current dental literature during the year, classified, indexed and bound in one volume. This will be a valuable book for the progressive, practical dentist—a ready reference book. To appear annually, first volume during January, 1891. We congratulate Dr. Catching on his new venture for we know his ability and push will make it a successful one, and suggest to our readers that they cannot invest \$2.50 more profitably than subscribing for this work. Address Dr. B. H. CATCHING, Atlanta, Ga.

LITERARY NOTE.—P. Blakiston, Son & Co., Philadelphia, will publish about March 15th, a new Medical Dictionary, by George M. Gould, A.B., M.D. It will be a compact one volume book, containing several thousand new words and definitions, collected from recent medical literature, while the total number of words is beyond that in any similar book. It includes also elaborate and useful tables of the Bacilli, Leucomaines, Ptomaines, Micrococci, etc.; of the Arteries, Nerves, etc., and of the Mineral Springs of the U. S., together with other collateral information.

Our Aftermath.

EDITORIAL CHANGE.—Dr. B. H. Catching, of Atlanta, Ga., has resigned his position as editor of the *Southern Dental Journal* to devote his time to the compiling of practical thoughts for an annual to be known as Catching's Compendium of Practical Dentistry. Dr. H. H. Johnson succeeds him as editor of the *Southern Dental Journal*.

ISAAC SAWTELLE, DENTIST AND MURDERER.—Boston dentists are not well pleased with the action of the Massachusetts Board of Registration in Dentistry, because it granted a license to Isaac Sawtelle, the fratricide, while the fellow was an inmate of State prison serving a sentence for a heinous crime. Many dentists have been dissatisfied with the administration of the present board, alleging that it has been unfaithful to the trust reposed in it, and generally unmindful of the duty it owes the profession in the way of protecting it from the competition of quacks and preventing the admission to practice of persons of immoral character. They threaten to bring the matter to the attention of Governor Brackett and to ask him to order an investigation.—*N. Y. Tribune*.

PAINLESS EXTRACTING, IN TWO CHAPTERS.—Chapter First: Do not fail to call on Dr. Kean at the Kerr House and have your bad teeth extracted without pain or sleep.—Clipped from the *Marion, O., Independent*, Feb. 4, 1890.

Chapter Second: Marshal Jim Redd had all his teeth extracted Wednesday "without pain," and as a result the brave marshal is very very sorely distressed to-day, cussing the man who performed the job.—Clipped from *Marion, O., Star*, Feb. 13, 1890.

Returns not all in yet.

The End: P. S. Any dentist wishing to use the above process in his practice can procure an "office right" for \$75.00.—Correspondent.

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Contributions.

“A word fitly spoken is like apples of gold.”—SOLOMON.

ACE N₂O.*

BY H. E. HARLAN, D.D.S., TOLEDO, O.

THE subject of anæsthesia, whether local or general, must be of considerable interest to the members of a profession who are continuously called on to inflict pain and suffering. And as the tendency of the public is to avail itself of the relief offered by anæsthesia, we will certainly be called on more and more to serve the public in this respect.

I have nothing to say of the propriety of a dental surgeon administering an anæsthetic, as that is a matter to be discussed under another head. Neither do I wish to be classed with the gas and vitalized air tooth pulling fakir, but rather seek to bring the subject before you as one who is anxious to know more of anæsthesia and the best methods of obtaining it.

In presenting this paper to the society I am impelled more by the hope that it will bring our intelligent discussion and sharp criticism that will give new light and information on this subject, rather than of any desire to foist a theory on you or that I am offering anything especially new. That the subject is fraught

*Read before the Northwestern Ohio Dental Society, at Toledo, O., March, 1890.

with interest, both in its anæsthetic phenomena and its physiological effects and manifestations, no one will deny.

In the administering of gas and other anæsthetics, there are certain effects that are to be guarded against and that are a cause of apprehension and fear when they occur, and this fact makes a timid, careful man desirous of such changes or additions as will best insure safety and freedom from danger to the patient and operator, and having had some experience with this combination anæsthetic I have come to some conclusions based on data obtained in my own experience that I shall present to you in this paper.

It is an incontrovertible principle that any form of general anæsthesia is a condition of danger, and those who administer anæsthetics should seek to use only such agents as are the freest from the signs of danger and that have the smallest death record from their use.

Every careful and honest dentist who has administered N_2O , will readily admit that there are certain phases and conditions of this anæsthetic phenomena that are both alarming and a cause for apprehension, and while the data before the profession as to the death rate makes it exceedingly small, yet deaths do occur and the alarming symptoms still continue which are a cause of anxiety to the operator and alarming in the extreme to the patient's friends. These facts have compelled me to regard the possible modifying or changing of the physiological effects for the better as a thing to be desired and sought after, and has taught me that a thorough acquaintance and familiarity with the heart beat, arterial pulsation, respiratory effort, discoloration and appearance of patient, length of anæsthetic period, purity and quality of gas, are things of major importance and that they can only be learned and retained by continual practice and experiment; and in this spirit I was led to use the combination anæsthetic with which I have headed my paper, ACE N_2O .

To intelligently comprehend the nature of this combination one must understand the physiological effects of A, C and E singly and in combination with N_2O . Alcohol when taken into the stomach in small doses is a stimulant, cerebral excitant and anæsthetic and raises the temperature when inhaled as a vapor. These effects are repeated, only intensified.

A very simple experiment is to hold the head over the high

wine tub in a distillery and inhale the alcoholic vapor for a few minutes. There is first a sense of exaltation, then a marked increase in the functional activity of the heart and lungs with a noticeable increase of temperature. After a few breaths of air the effect passes away. It may be said with certainty that alcohol in the gaseous or vapor form acts more readily and quickly than in the liquid and that it increases the vital activity and energy and hence its value in this combination.

In ether narcosis probably the most marked physiological change is the progressive paralysis of the vital functions, the respiratory centers becoming depressed more rapidly than the circulatory. And this in connection with any abnormalities of breathing after the muscular relaxation has set in should be especial signs of danger, as also are stertorous breathing, excessive lividity and great palor of the face and the irregularity of the pulse.

In chloroform narcosis the signs of danger are to be looked for first with the circulatory system, though it has not been infrequent for both the respiratory and the circulatory centers to be effected simultaneously. Owing to the peculiar lethal power of chloroform and its liability to cause death in the first stage of administration, it is doubtful if it should be used in any but small quantities and supported by positive cerebral stimulants.

In combining ACE with N_2O it should be remembered that alcohol is administered in a vaporized state and in sufficient quantities to antidote the chloroform. (Note Dr. Snow's experiment.)

It is generally admitted that palor, lividity, stertorous breathing, failure of heart, depression of respiratory centers, decrease of temperature and asphyxia are the special signs of danger in ACE and N_2O narcosis when administered singly or in combination.

Now, to avoid these several signs of danger and to maintain a normal functional activity of heart and lungs is to progress, and when to this is added flushing of the face, increased temperature, profound anæsthesia and freedom from stertorous breathing it is certainly bringing anæsthesia to that point where danger is reduced to the minimum.

To obtain these results I use pure gas, A_2 Cl E_3 , about two drachms to ten or twelve gallons of N_2O , allowing the patient to have a full respiration of air every third breath.

The effect of this combination is peculiar, in as much as it is devoid of four noticeable features of ether, chloroform and gas, that is palor or lividity and decrease of temperature, circulation and respiration. Under its influence the pulse increases, the lung activity and energy is greatly exaggerated and there is a decided flushing of the head and face with increased bodily temperature.

The admixture of air I consider an essential feature, although it takes longer to produce anæsthesia. The patient usually has decided and vivid dreams, which are affected to a considerable extent by surrounding objects and sounds. There is frequently a tendency to become lacrymose and the patient seems to be in that maudlin condition produced by alcohol.

The period or length of time that the patient remains insensible to pain varies in individuals and I find in very young persons that the admixture of air produces decided symptoms of hysteria. The patient generally recovers slowly and regularly to a normal condition, and, so far as I have been able to ascertain, has never been followed by any untoward symptoms.

I once had a patient vomit after she began to recover from the effects of the combination, but she was two months pregnant and as she expressed it was continually sick at the stomach, and had recently eaten a hearty meal and had drank four cups of tea with it, so that I considered that the anæsthetic was hardly responsible for that effect.

Under the influence of this anæsthetic I have extracted twenty-two teeth and roots at one administration with no pain to the patient, and have frequently extracted ten, and a dozen, so that the first case could be no special exception.

There are cases, of course, where I do not use the chloroform in the combination, and I am not laying down any rule that will not have to be changed or varied, as the case will determine whether the anæsthetic should be used at all, and the intelligence of the dentist or operator will be called on in every case to use his best judgment and exercise the utmost care and caution.

I always have prepared and at hand nitrite of amyl, ammonia, and alcohol in a hypodermic syringe, a sponge filled with cold water, and always insist on the patient having the throat, chest and abdomen free to expand and unencumbered by braces, stays or bandages. The general directions for preparing a

patient and their position I will not repeat, as that is known to all of you.

In keeping a record of the heart beat and pulse I always keep my forefinger of left hand on the external corotid artery on the left side of the neck, as it is more convenient than to keep it on the wrist.

In closing this paper I repeat that this is yet an experiment, but as I believe, worthy of some consideration for the reasons mentioned.

RE-PLANTING AND NOT SUB-PLANTING OF TEETH.*

BY DR. S. CLIPPINGER, TOLEDO, O.

I COME with a paper to-night, lest when called on, I be found wanting. This I am aware is not an evidence of strength professionally, but rather of weakness, for the man of strength is always ready. But it at least shows a willingness to do our little part, to help kindle the fire which we as members of our specialty of the medical profession are trying to build, that the dross of our efforts may be consumed, and the purer, better skill may stand out apparent to all our patrons by our success professionally. But to business.

On January 9, 1890, I had the misfortune while extracting the first right inferior molar to remove the second right inferior bicuspid. Whether I was to blame or not I cannot say; be that as it may, the tooth was out of its socket lying loose in the patient's mouth (a man of about thirty-five years and of a bilious or lymphatic temperament). After filling the nerve canal and a small cavity on each proximal surface, also dressing off the apex of the root and washing out the socket, I replaced the tooth in its former position, applied counter irritants to the gum, and prescribed an alterative to be taken after each meal for three or four meals; also requested the patient to call the next day, but he did not until the second day.

Found the tooth doing well. I again applied a counter irritant to the gum requesting him to call if the tooth did not do well. I did not see him again until the 15th of February. He said the tooth was doing good service and all right in his mouth.

* Read before the Northwestern Ohio Dental Society, at Toledo, March, 1890.

This case has nothing of special interest in it for the result was what we can expect, as the conditions were all favorable though not of the best.

Case No. 2. February 18, 1890, a lady of about thirty years and of a nervous temperament. This case is altogether different and very interesting to me, at least, owing to the unfavorable conditions of the case when it came to my notice.

First she had been suffering for some two or three weeks with la grippe and was quite sick, as the disease took on something of the pneumonia form, and the last week before she called at my office the second left inferior bicuspid became troublesome, owing to the fact of the nerve being exposed from decay in the posterior proximal surface. This had been neglected until the pulp was dead and as I afterward found suppuration at apex of the root had set in, but at the time I could not decide but was fearful that it had; the parts were so very sensitive and the patient so nervous that I applied counter irritants, prescribed an alterative to be taken three times a day or until relief came, if any, if not, to call in two days. Second day patient came back; symptoms were, patient more nervous owing to loss of rest and pain; the husband being a druggist gave her anodynes to give her rest from pain, and this added to the patient's prostration. The parts were not much swollen but very sensitive to touch, and owing to patient's prostrate condition I decided to remove the tooth, much as I regretted to do this, owing to the fact that the arches of the inferior and superior sets were both perfect on that (the left side), while on the right side they were not. So I concluded, if possible, to yet save the tooth for my patient; so after properly preparing the tooth and treating socket I replaced it in the socket. I confess, owing to the unfavorable conditions of my subject, I had many misgivings as to the result, but after letting her rest awhile (for owing to the inflamed condition of the socket it was very painful to her to press the tooth back to its place, in fact I had to let her do it by closing the jaw gently until the tooth was down in place), then I applied a counter irritant with direction to continue the alterative, also to apply an anodyne in the form of a warm emulsion to the face on retiring that she might get rest. This was on the 20th, and I did not see the patient again until the 24th. I called at store, patient was there bright and hope-

ful, tooth doing nicely though there was a little tenderness when pressed on, the surrounding gum was healthy in appearance, swelling all gone from face and gum, ordered continuance of alteratives until all tenderness was gone. This case is one full of encouragement to me, to meet those cases where, to undertake to operate or treat to give relief, is the next thing to an impossibility, owing to the patient's nervous condition and the extreme painfulness of even wiping out the nerve canal, while to extract took but a second, and by the use of cocaine before extracting, also in socket before replanting, the pain can at least be very much modified. At present the tooth is doing nicely and bids fair to be of good service to patient. Could I know that each case of this kind could be as successfully treated as was this one, I would feel at least encouraged in this, that another string was (so to speak) added to my bow for conquest in combatting the ills to which the human family are heir. Be that as it may, I at least shall try, try again, hoping for the best, and of necessity have to submit to the worst, but not until then.

ATTENTION! DENTAL PROFESSION!

BY DR. GEO. A. MILLS, NEW YORK CITY.

YOU ask in a late number for contributions. For a theme—I do not think there was ever a time when there was so much which needs intelligent attention, each subject needing our best analysis. Since CHAPIN A. HARRIS we have had an *alma mater*; and tenderly and manfully should we conserve these primitive efforts and provide the best surroundings for crystallization.

I am quite sure that an effort to procure a suitable memorial in the structure of new college buildings with all modern appliances for the Baltimore Dental College, is timely. Her *alumni* are immense, and, without a doubt, have one member who alone could buy out the entire household of dentistry and have a liberal supply left. I think, in common with many others, that Doctor Evans—a true American—has creditably stood, in many ways, as a representative for our calling in all Europe, for many years. Baltimore Dental College may well be proud of him. As the question of colleges has come in here, it may be well and proper

to allude to the part they have enacted, which to-day indicates that in the near future we are to take a more definite form in all that which enters into a make-up of professional life, whether we are to be independent or not does not matter. The time has come when sound advice is needed based upon underlying principles which must become the foundation of all lasting structures. Already a rustle is heard in the west, and southwest, and from no ordinary minds. I refer to Drs. Dean and Ingersol. Discussions from such a class of minds are worthy of our best efforts for digestion.

Dental education, as it has been applied, has done nobly considering the kind of field it has worked in, this field rich in defects like the toilers. So instead of even trying to muzzle the oxen which have trodden out the corn, we must aid by faith, hope and charity, in our largest gifts of generosity. We must hold up the arms and support the feeble knees.

Dental colleges have come to stay; and they are determined to prove that our future skill will stand, not only side by side, but also to transcend our so-called mother—medicine. In a word, we are to out-wind the old lady, grand old creature as she has shown herself to be. Let us when we pass her in review, not forget the salutation of profound respect. If we go up higher, and we will, in order to see us, medicine will be obliged to look up. This will be our *earned recognition*. In the mean time let us make as little waste of our energies as possible. Our schools will be what our calling shall demand. While some have got a little lucre out of the avocation of dental teaching, most have got only an empty barrel echo, viz., "Professor." We predict better days for our schools, ultimately they will be in deeper water, freighted with a better quality in all that promotes growth. From east to west, from north to south, organization has gained hugely in membership, and groaning with friction caused by crude material. The mills of the gods are grinding and in the end will be ground fine. Everything for the higher civilization will have to be fine. We think that legislation has put on about all the strain things will bear. Compelling membership will round up votes, and furnish lucre for the avaricious politician who lurks in all our bodies.

Discussions in our oldest and best (or ought to be) association are sadly deficient, and have called out some just comments.

These mutterings will not be downed, and they cannot be. 1892 must see them plucked up root and branch, if unity means anything. "What must we do to be saved?" is in the air universally. Dogmatism, bigotry, and selfishness must go the wall. First socialism engendering brotherhood creating a generosity that will have for its ultimate purpose the good of mankind. The stronger we can become, in this direction, the wiser will we be, and our wisdom will be given more liberally, and with less upbraiding. Such a spirit is doubly needed. The pioneers of our calling are marching in quick step with some irregularities towards the great divide, and many have naught but their little private inward echo ("Well done!") for their reward. To these it will be joy that their work may be trusted to the worthy hands of those of quicker blood. We believe that never were greater possibilities to be entrusted to a class of men. The human is the instrument which, with proper use, is to move the world. We do not need so much talk with the mouth, but a better quality out of it. No portion of the body requires so much guarded attention, and none has had so little. Had this been better understood, the better man would have been represented. The most medicine has done for the mouth has been to use it as a funnel to pour drugs into the stomach. While the dentist has made much advance yet he must admit that the mouth is sadly needing a more intelligent attention. Medicine and surgery as allies will complete the tripod.

To secure the fulfillment of our best hopes, every aid which will cohere best all that which we are to become, we must enlist. But this can only be done with the largest confederation of all that which will bind in a common fraternity—grindstones all out; axes all ground; every one vying with the other to do the thing he can best do. Willing work, not useless servile labor. We must have alacrity in serving best all that which will conserve our development. We are not without dangers; but on the other hand, we have many safe-guards by association and through independents yet dependents. Through these channels there can be a liberal diffusion, in this sense our multiplied resources may prove providentially our salvation.

An old saying in the South to the colored boys was, "Jump around while your belly is full," applies to us well. Truly we are full and need proper exercise. We see signs of dyspeptic

grunts already, yet we hope with a few "cabinet meetings" (and we are not without faith) with a closer combine, wiser counsels will prevail, and that the best will come to the front. The First District Society of New York City is now twenty-one years of age, and it never made a better appearance, in all that is manly in proportions, than at its late meetings. It is rich in experience; it is full of possibilities. Will its members see it, or will they loaf on their prosperity? We have waited eagerly and patiently to see what would be done with the *admirable* suggestion of President Carr three years ago, when he introduced in his address the idea of this society looking forward to the founding of a home, a club, a post graduate school, a hospital for demonstration in practice, and the same in eleemosynary work; and alas! all I can learn of the thought it is buried in the trenches. In conversation with one of the most earnest members since the last meeting, I spoke of this suggestion and its prospect. I was told that it was buried (possibly alive) yet was the prediction emphatically made, "If New York does not do this thing, it will be done somewhere else." I think a little of the spirit has crept in that some men have been so *honored* by their calling that they have overlooked its claim on them for honoring it. I think the mass of dentists do not think of their part in honoring their calling, as it is worthy of being done. I do not think the majority are thoughtful of these claims and of their importance. Our calling needs the stimulus of a movement in such a direction. We need it for an exhibition of public spirit. We believe in common with others that nothing could or would do so much to demonstrate the real merit of the work we have in hand, in an emphatic manner to the medical profession. As it is now it has little opportunity to face the real measure of our work. It is occasionally brought subjectively to them by a personal experience. The most of demonstration is crude and indirect. We are not in any respectable sense regarded worthy. Resolutions on paper do not touch the great central pulse of progress as we are capable of presenting it. As things are moving we are not quite sure, but our position will, by virtue of its necessities, make for itself an independent one. "The best way will be as good as any."

In no way can we move in the line of usefulness as by public eleemosynary work, and in the interest of this enthusiastic effort should we specially tend. We believe no one question is more

important. It would do much to unlock our generousities, our ambition and our pride. No one thing would magnify the importance of our work in the interest of suffering humanity and liberate us from the much cultivated field of tinkering which has fastened so tenaciously upon our better purposes. In all large cities are numerous public exhibitions of eleemosynary work in all departments but ours so pregnant with benevolent possibilities.

ROBINSON'S FIBROUS AND TEXTILE METALLIC FILLING.

BY W. BUZZELL, D.D.S., PORT CLINTON, O.

I HAVE no pecuniary interest in the manufacture of this useful article and no acquaintance with the manufacturers; if I had, I'd endeavor to have it re-christened with a shorter and less inconvenient name.

I have used it, however, for the last six years to fill the cervical portion of cavities in the approximal surfaces of molars and bicuspsids with most gratifying results. I have four such fillings in my own mouth, and a recent examination showed them to be in perfect condition after three to six years use.

I have been able to examine several that I inserted four to six years ago and found them all in good order.

My method of procedure is as follows: I prepare the cavity as I would for gold, making a groove or undercut entirely around or as nearly so as practicable. Then I adjust a matrix (I generally use a matrix) and insert the foil in pieces a little longer and wider than will cover the floor of the cavity, first pushing the pieces into position by hand-pressure with a moderately large faced plugger and condensing well with the mallet, being careful to pack it solid against the matrix and into the retaining groove, and especially into the angles formed by the matrix and the margin of the cavity. I fill one-third to one-half of the cavity with the Robinson foil, completing with cohesive gold and finishing as usual. As the foil will tarnish, it should not be used where it can be seen. It will not, however, discolor the tooth. It welds readily if annealed by warming on a hot steam pipe, moderately warm stove, or over an annealing lamp, taking care

not to melt or burn it. Gold will adhere to it enough to make an easy start, which is readily accomplished by packing a small piece of gold into an angle with a small pointed plugger, and building across until the gold is securely held by the walls of the cavity. Anchorage for the gold should be secured independently of its adhesion to the Robinson foil. I think it has all the advantages of tin in such cases. On account of its softness and *spreading* qualities it can be rapidly inserted and perfectly adapted without injury to the margins of the cavity walls, an important consideration when filling teeth with frail walls or of inferior texture. In such cases I believe it to be more reliable than gold alone or amalgam.

CARIES AND NECROSIS—A CASE IN PRACTICE.

BY J. E. MORTON, D.D.S., BROOKVILLE, IND.

SEX, female; Aet, 10; temperament, bilio nervous; diathesis, scrofulous; condition, extreme emaciation, enemia marked; mucopurulent discharge from nares; fistulous opening under right inferior maxilla; exfoliation of right superior alveolar process from premolar region; right antral cavity engorged and greatly distended.

History: About one year previous to presentation, the patient fell from a tree and received serious injuries, among others a contusion upon the region of the right superior premolars, premolars at that time were badly decayed. Within a few months an offensive odor was detected, the premolars loosened and pus was discovered exuding from about the necks of the affected teeth, they were removed by her parents.

The offensive condition increased, discharge from the nares, swelling under the right eye indicating engorgement of the antrum, a fistulous tract leading from the seat of trouble, opened under the inferior maxilla and a throwing off, or exfoliation of the dead process.

Diagnosis: Examination with a sharp probe revealed that the diseased tract involved the entire right superior alveolus from median line to and including the sixth year molar, the hard palate and the lower plate of the molar superior. The temporary

cuspid and permanent first bicuspid (it having erupted subsequent to injury) were held *in situ* by the gum tissue alone. The central, lateral and sixth year molar were quite loose. All evincing an extensive carious and necrotic condition.

Treatment: The first step was to procure an impression of the upper mouth and make a plate of black rubber for the double purpose of supporting the loosened teeth and retaining in position the dressing to be applied after operating. This was placed in position and the teeth of the whole arch securely ligated to it before operating. Then anæsthetizing with 4 per cent. cocaine we proceeded with burs, chisels, scrapers and spicula forceps to remove the dead bone as thoroughly as possible.

When the operation was completed (and we should say we found it necessary to remove the temporary cuspid and permanent first bicuspid) the cavity of excavation extended the entire distance from median line to region of second right superior molar, and to a depth that left only a thin plate beneath the antrum and including the whole alveolar border and the palatine plate one-third the distance to the suture. The roots of the central, lateral and first molar were denuded upon their labial surfaces, and the lateral upon the lingual surface as well.

While operating the instruments were kept immersed in $\frac{1}{1000}$ bichloride of mercury solution and the parts were frequently and thoroughly bathed with the same. A forcible entrance was made into the antrum just anterior to the first molar, and it was thoroughly evacuated, first using tepid water then a 50 per cent. solution of aromatic sulphuric acid and a free entrance secured into and through the nasal passages from the antrum. Careful examination failed to reveal the presence of any foreign substance within the antrum, the lining membrane of which, however, was in a highly inflamed condition. Peroxide of hydrogen was freely injected, followed by tepid water and again by the aromatic sulphuric acid solution. Care was taken to guard against a closing of the opening into the antrum by the insertion of a gutta-percha tent with a button to prevent its being forced into the cavity, and the external wound dressed with boracic acid and a cotton compress, the boracic acid being rolled into the cotton to prevent rapid absorption, and the patient dismissed with instructions to return daily for renewal of the dressing and injection of the antrum. At the expiration of two weeks the

gutta-percha tent was removed and the opening allowed to close. The dressing was then done twice or three times per week by us, but renewed daily by the parents until discharged at the expiration of three months. Nine months have passed and the patient is in good health, no indications of a return of the trouble are or have been present.

From the first there had been no pus within the wound until after the daily visits were discontinued and then only slight, and on two occasions, whereupon an application of peroxide of hydrogen was made, the wound bathed with eugenol and the boracic acid dressing applied. Healthy granulations formed from the first, and although bluish-red points appeared and hemorrhage occurred upon slight irritation; exploration failed to reveal the presence of carious bone and the irritation subsided. We prescribed syr. iod. ferrum x min. three times daily and plenty of good wholesome, nutritious food. At the end of the first month discontinued the syr. iod. ferrum and prescribed an emulsion of cod liver oil until discharged.

THE INTERNATIONAL DENTAL NOTATION.*

BY GEORGE CUNNINGHAM, M.A., CANTAB., L.D.S. AND D.M.D., HARV.

At the International Dental Congress held in Paris, Sept., 1889, Mons. Grosheintz, of Paris, made an interesting communication entitled, "Dental Stenography," and in which he suggested certain symbols which he hoped to see become international—so far as the dental profession was concerned. The main features of the communication may be briefly summarized as follows:

(1) He proposed to represent the teeth by the first letter of the Latin words which are ascribed to them; for instance, for the bicuspid he employed "B" for the first, and "b" for the second, and the same for the incisors and so on.

(2) Two lines, one horizontal and the other oblique from above or below, would serve to designate by the opening of the angle the right side or left, and by the superior or interior position of the oblique line to which of the two jaws the tooth belongs.

*A paper read before the Odontological Society of Great Britain.

(3) The temporary teeth (*dents caduques*), are designated in the same way, with the addition of "c" as exponent.

(4) Then by the aid of the figures 1, 2, 3, 4, placed according to the case after the denominative letter, the degree of caries is indicated.

(5) The surfaces attacked by caries are also designated by letters.

(6) He also suggested a series of abbreviations to designate the disease, the medicaments, and the materials employed in filling.

Mons. Dubois, of Paris, whilst strongly supporting the objects sought to be attained by Mons. Grosheintz, criticised very strongly his symbols, more especially those devoted to the teeth. He then explained the method which he had adopted and recommended in his book, *Aide-memoire du Chirurgien-dentiste*. This method will be explained presently.

Mons. Schwartz, in criticising the symbols suggested, said that he, too, would prefer to see the teeth designated by figures instead of by letters.

I then had an opportunity of explaining the features of a system of notation which has been employed both by others and myself with considerable success for a considerable number of years. As a part of this system I had adopted the method of numbering the teeth employed by Dr. Finley Thompson, who began numbering from the right upper third molar, and counting straight on to the same tooth on the left side, and then continuing from the lower third molar on the left side to the one of the right side, thus finishing opposite where he had commenced. This was done simply to avoid confusion, since his chart of the teeth, and the respective numbers attached were already in use in this country.

Candor compelled me to freely admit that this, of all the systems of numbering, was the very worst, and that years of constant daily use of the system had failed to give me the power of at once recalling with certainty the numbers indicative of certain teeth. Whereas one was able to memorize the Dubois system by five minutes' study for as many, if not fewer, consecutive days.

Mons. Trallero, of Barcelona, proposed that, since the question was one of great interest, and several different systems had been suggested, a commission be nominated to consider the sub-

ject and report thereon. This proposition having been accepted the commission was duly nominated as follows: MM. Grosheintz, Dubois, Schwartz, Trallero and myself.

This commission, first of all, decided that it was better to adopt a system of figures rather than one of letters to designate the various teeth. It was found that all the various systems of numbering teeth by figures might be classified into three systems:

- (a) The system of 8.
- (b) The system of 16.
- (c) The system of 32.

It was resolved that any system of numbering by 32 was inconvenient, confusing and difficult to memorize; it was therefore unanimously rejected.

The system of 8 was warmly advocated. It consists of 4 groups of 8 numerals starting from the median line, the respective teeth of the upper or lower jaw being indicated by the position of the numerals above or below the horizontal line, and their situation relative to the median line being shown by a vertical line on the median line side of the figures.

The alternative (Hillischer's) system, which substitutes a point or period for the vertical line, was also considered.

The only system of numbering by 16 which was considered was that proposed by Mons. Dubois, which consists of employing all the *old* numbers from 1-15 to consecutively represent the various teeth on the *left* side of the mouth, and the *even* numbers 2-16 to represent those on the *right*, the lower teeth being distinguished by a line drawn underneath each numeral representing a tooth in the lower jaw.

It was the unanimous opinion that the system of 8 numerals was certainly the easiest to comprehend and to memorize. It was considered, however, that while the Dubois' system of 16 was slightly more difficult, it was yet sufficiently easy of comprehension, and would avoid in an ingenious manner the necessity of employing any point or vertical line before or after the numerals. It was determined, however, to adopt the principal of the horizontal line as indicating whether the teeth belonged to the upper or lower jaw, which only necessitates the use of the line above the numerals in the case of a tooth belonging to the lower jaw, since the simple numeral, *without* a line below it, is sufficient to indicate its being an upper tooth. It is evident that either of

simply arose from the difficulty in finding an equivalent which would be the same in the various languages. The term "crown," or even the mere term "coronal," it was urged, is not employed in France* to indicate the masticating surface. It was, therefore, determined to substitute "t" instead of "c" for the crown surface, as being the corresponding mnemonic contraction for triturating surface (F., *Surface triturante*; L., *Superficies triturans*). It was also determined that, since labial and buccal are only two different names descriptive of the same surface, only one symbol, viz., "l" for labial, should be employed; the same remark equally applies to the terms palatal and lingual, and therefore only one symbol, viz., "p," has been adopted. The symbol signifying cervical is a segment of a circle; by accentuating the curve the sign can be made to graphically indicate the extent to which the cervical margin of the tooth is involved.

The following symbols were therefore adopted for describing the surfaces of the teeth:

T., triturating (synonyms: crown, coronal.)

M., mesial.

D., distal.

L., labial (synonym: buccal.

P., palatal (synonym: lingual.)

—, cervical.

By means of the first five signs and their obvious combinations, such as mesio-palatal, disto-lingual, and so on, it is easy to sufficiently define even any irregularly-disposed carious cavity, e.g., a cavity extending from the mesial over the crown to the distal surface is sufficiently described by the letters, m.t.d. If, instead of a single compound cavity, it is desired to indicate three separate cavities on these several cavities, the use of the colon is sufficient to distinguish the difference thus—m:t:d:. The colon is always and solely employed to define the localization and the operative terms, and so prevent confusion with any adjacent symbols.

It was further determined not to suggest any further series of abbreviations for the present, as it would be advisable to consider the various systems suggested at greater leisure than the present occasion afforded.

* At the time of the Commission, had I remembered that Dr. Andrieu had adopted the term "coronale" in his *Traité de l'odontologie opératoire*, p. 351, as applicable to "la surface triturante des dents postérieures," I should not have yielded so readily to what seemed a necessary change, since a cardinal factor in the success of any system must be its freedom from any capricious changes.

It was further recommended that some mnemonic system, such as that recommended by myself, was more likely to lead to satisfactory results than the system of arbitrary signs so commonly used in America.

This mode of notation, recommended by the Commission, was unanimously adopted by the Congress at its final session.

Despite the fact that this society, in common with other dental societies, has not hitherto devoted much attention to this subject, I think it is unnecessary to dilate upon the very obvious advantages of having some one carefully-considered system of notation accepted for common use. I trust you will agree with me in thinking that it is a matter of congratulation that the co-operate intelligence of the profession has at last been aroused to the urgency of united action in this matter, and thus made a beginning of reducing to uniformity and order the somewhat chaotic productions of the various individual intelligences which have found expression in occasional contributions to societies and journals, not only in this country, but also in America, France and Germany. I therefore recommend a trial of this International Dental Notation as being easy of acquirement, time-saving, and eminently practical. Its ultimate value will depend upon the extent to which it is adopted by the profession. Its value to the individual in keeping a record of his work, in communicating with an assistant, and in corresponding with another practitioner, is evident. But before such a society as this I would urge its value to science, if only from its help in transforming the crude, almost entirely commercial, entries of the day-book or ledger into the carefully-recorded facts of the case book, the tabulation of which will certainly do much to remove the endless records of vague, unverifiable conclusions with which our scientific literature abounds.

UNUSUAL FORM OF TUMOR OF THE CHEEK.

BY DR. MAX BARTELS, BERLIN.

DR. BARTELS, who occupied the chair at the meeting of the Free Association of Surgeons of Berlin in November last, gave an account of a very rare tumor of the right cheek. The patient,

a strong hearty woman of 60, had noticed the tumor 28 years before, when it was situated quite close to the angle of the mouth; it was then, according to her account, about two fingers wide, so that it would appear to have existed for some considerable time before that. It grew slowly but steadily, without causing her any pain or inconvenience. Two years ago, she accidentally wounded the tumor with a comb, and the small wound, which bled very profusely at first, soon gave exit to a quantity of pus, which would amount to almost a litre a day. The patient now hoped that the tumor would now suppurate away entirely, so she set to boring the tumor in every direction with a needle, each seance being followed by free hemorrhage. The tumor recently began to increase largely in size, so that she wished to have it removed, and applied to Dr. Thorner, who brought her to Dr. Bartels for the purpose of operation. The growth occupies the whole of the buccinator portion of the cheek, its broad base springing from the soft parts of the cheek. It has somewhat the shape of a large long apple, and its base reaches from the zygoma above to a little below the angle of the mouth, and from the nasolabial fold to the anterior border of the masseter. The tumor is dragged down by its own weight, so that the summit reaches as low as the border of the lower jaw. The patient wears a kind of suspensory bandage to support the tumor. The skin is quite moveable over the lower part of the growth, but at the summit around the fistula it is discolored and adherent to the parts beneath. The tumor is quite painless, of a soft elastic consistency, not adherent in any part with the bones; the tumor projects somewhat into the cavity of the mouth, and carries the mucous membrane with it. The glands of the lower jaw on either side are enlarged, most likely owing to the neighboring suppuration, but the parotid region is quite normal.

The tumor was shelled out with difficulty, the hemorrhage being free; the skin was spared as much as possible. The enormous gap in the cheek was then closed by a plastic operation. In six days the wound had closed with the exception of a punctiform close to the angle of the jaw, from which fluid constantly exuded, and which still remained open two months after the operation. Since then the patient has been lost sight of.

The examination of the tumor by Dr. Virchow showed it to consist of a central nodule of almost pure fibro-cartilage, sur-

rounded by large numbers of pseudo glandular tubules supported by a framework of widely dilated vessels (teleangiectosis). Scattered here and there in the substance of the tumor there were a number of melanotic spots full of pigment. The malignant character of the growth is shown by the presence of a number of accessory nodules branching from the large mother centre.

Dr. Bartels has been unable to find any record of a similar case. With the exception of epitheliomas the tumor of the soft parts of the cheek are of very rare occurrence. Including the present one Bartels has only found nineteen cases in medical literature, and as of this number twelve were men and four only women, it would appear as if the male sex was much more prone to these growths than the female. Both sides of the face would appear to be equally affected (six on the left to seven on the right). With the exception of a new-born child all the other patients were adults (six between 18 and 30, and ten between 40 and 70). In most cases the tumors had existed for a considerable time ($1\frac{1}{2}$ to 7 years; 1 for 28 years; 1 for 43 years); they belonged to the most varied forms of growth. By far the larger number were lipomas (7 true and 1 angioliipoma) so that this form may be said to be the most frequent form of tumor of the cheek. In many cases they have been supposed to be cysts, and have been punctured before removal. These tumors generally spring from the layers of fat in the canine fossa. The fibromas and sarcomas have their starting point in the connective tissue of the cheek. The point of origin of the enchondromas, adenomas and their mixed forms must be sought in the glands, for such growths have been found in numberless instances in the parotid and submaxillary glands. It appears most probable that the small glands, which according to Henle, Sappey and others, surround Steno's duct at its point of entrance into the mucous membrane of the cheek. It was at this spot close to the angle of the mouth that Dr. Bartel's patient had first noticed her tumor.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

PREPARATION OF THE MOUTH FOR THE INSERTION OF ARTIFICIAL TEETH.

BY FRANK HAMPTON GOFFE, L.D.S., ENG. AND EDIN.

A GREAT many older practitioners lament the decline of mechanical work, and compare it unfavorably with the practice of former years. I think, however, that with the selection of the various materials and teeth at our disposal a dentist can exhibit more skill and artistic workmanship now, than was hitherto possible, and when I see porcelain crowns and dentures inserted showing considerable constructure and manipulative ability I have great hopes for an increasingly high place in our profession for prosthetic dentistry.

I consider it would be very desirable if gentlemen with large practices would recount their failures, as no doubt many continually occur. For you constantly hear of patients who are unable to wear a denture with comfort; I possess a box full of discarded teeth, many of them well made, and by men holding the highest position, proving how some little fault has disappointed the wearer.

There is, unfortunately, a feeling amongst qualified dentists to disparage mechanical work and think they take a higher position by devoting themselves to surgical and operative work, and consequently, after taking the model of the mouth, hand it over to their pupils in the workroom for future manipulation; this is a great error, as these have never seen the patient, and have simply the model to guide them.

The teeth fulfill several important offices, viz., mastication, articulation and personal appearance; and it is for any of these purposes that the dentist may be required to supply artificial dentures; it is very important to bear in mind, that personal appearance takes a most important place with the bulk of people,

even those who seek our aid in consequence of impaired digestion, think that while mastication is being restored they might also have their personal appearance improved, and, for this reason, the one who sees the patient certainly ought to superintend the work in the laboratory.

There is something else for a dentist to do beside extract teeth and supply new ones; it is right that as many teeth as possible should be saved, but we must not allow ourselves to think, as some of our teachers would have us do, that there is only one way of doing this, namely, by filling. Each will have his own particular fancy, one by filling, another by cutting down to the edge of the gums and putting on a new crown. Each may be equally successful in his way; but I think that with a great many operators filling is overdone, otherwise we should not see the unsightly exhibitions of huge white fillings and gold contours showing right in the front of the mouth, this is certainly not my idea of æsthetic dentistry. I think very few people will deny, that a more lasting piece of work might be made and the appearance benefited, if a new crown were mounted or a porcelain front added.

A question very often arises in our minds, whether or no to recommend people to have old roots extracted. Some only remove them if they are aching; as a rule, if there are many fangs remaining, I certainly believe they should be removed, for at any time they are apt to set up inflammation, the root has to be extracted, and consequently, some amount of misfit results in your plate.

The roots of an incisor or canine tooth should not be extracted when it is the only missing tooth in the front of the mouth, but, if left, it ought certainly to be filled. Should the root be lost, it can easily be replaced by a gum tooth. These are not used so extensively in Birmingham as they deserve to be, for no other teeth restore the contour of the jaws and match the gums so well.

As a general rule, I should state that remaining teeth, which are incapable of being fully restored to health and usefulness, should be extracted, and if a tooth on one side of the jaw near the front of the mouth has been lost, and the fellow one on the other side decayed, it is always advisable to remove it to have both sides of the jaw symmetrical.

We not unfrequently meet with people, who will suffer extreme agony rather than submit to an operation, which would probably not cause as much pain as they have endured for weeks.

Patients will sometimes express great disappointment when they seek a dentist's advice, and he informs them, that their mouths are not in a fit condition for artificial teeth, and that they must submit to an extensive operation for the removal of the decayed roots and teeth, before any artificial substitutes can be inserted. This very often arises from the fact, that they have heard or read advertisements, telling them of wonderful operations, which it is very difficult for us to believe any sober minded person can credit.

Some will probably insist on having their own way, and should the dentist ultimately consent to perform the work, as they wish, the new teeth will be placed on painful and loose roots, increasing the inflammation, so that, in time, the teeth are discarded, and dentistry is made to bear the discredit. Therefore, in cases where patients will not act on the dentist's advice, he would consult his reputation far better if he refused to do the work.

Any accumulation of tartar, which most commonly collects round the buccal surface of the upper molars and the lingual surface of the lower incisors, should be carefully removed, to enable you to obtain a sharper model. Tartar is apt to cause an irritable state of the mouth, and the after success depends on this being thoroughly attended to, for, if any tartar remains, it forms a nucleus of further deposits. To smooth the scaled surfaces they should be polished with pumice powder and wooden points.

If the patients desire to have any teeth extracted, they may prefer to have them out one by one, or have them removed under the influence of an anæsthetic. If the latter is decided on, you have, then, to make up your mind, whether to administer nitrous oxide two or three times, or ether once. It is very annoying, after giving gas, to find that a root still remains, which you are unable to remove; so, if you think there is a chance of the operation not being successful, it is wise to give ether.

We will suppose the case is now ready for artificial teeth. Before taking the model you should examine the mouth, noting carefully the height of the palate, the shape of the arch and the

general characteristics of the alveolar edge. Another very important point is the hardness or softness of the tissues, at times you find the ridges hard and soft in different localities. The soft parts occur at the posterior part of the hard palate at its junction with the soft palate. Directly in the median line is a hard ridge; this must be remembered, as it is there that dentures are very apt to rock and on each side of this median line the soft tissues are found.

If any teeth remain, these should be studied, to observe if there are any undercuts which may drag in removing the impression of the mouth; some prefer plaster-of-Paris, and some modelling composition. The material used is not so important, as the amount of skill exercised.

If the patient has had a number of teeth removed, it will be from six to twelve months before the alveolus has sufficiently absorbed to warrant you inserting a permanent set of teeth; so, in these cases, it is far better to make a temporary set. These temporary sets can be made as soon as the patient has recovered from the effects of having the teeth extracted. I have put them in two days after the extraction with perfect success. It has been proposed to take the model immediately after the teeth are out and put the teeth in the next day. I do not think this a good plan, for, however carefully you remove the teeth, some swelling takes place at times. It is also better to allow the patient to get over the effects of the anæsthetic. These temporary sets retain the characteristic expression of the face, which, once lost, is very difficult to restore; not only so, but they help to maintain the proper articulation, which is very liable to be impaired, if people are without teeth for some months. When the temporary sets answer all the requirements, they should be worn until you are confident the mouth will undergo no further change than a permanent set should be made. It is sometimes a rather difficult matter to persuade patients to have a new plate, as they assert, that they and their friends are perfectly satisfied; this is hard on the dentist, as he may feel very certain, in his own mind, that there are several points which he could very considerably improve.

LABORATORY HINTS.

BY C. C. EVERTS, M.D., INDIANAPOLIS, IND.

ONE great trouble that beginners have in learning to solder is in melting the solder before the case is ready for it. The solder balls up just when we don't want it to and persistently refuses to go where we do, then we blow, and blow, waste lots of good wind, still to no purpose. Then if we are *some* dentists (which it is to be hoped we are not) we may even launch a few strong, old-time "cuss words" at the solder, blow-pipe and everything else but the thing to blame, namely, ourselves. Heat your case up thoroughly before you attempt to use the blow-pipe and you will not have near so much blowing to do; in fact, a very little will suffice. I have had sheet iron rings of three sizes made at the tinner's, with perforated bottoms set about an inch above the lower rim. I put my case in this ring, first having applied plenty of borax (don't be afraid to use borax), and the quantity of solder I think sufficient. I pack charcoal all around this, set it on my gas stove and let it heat. If you let it get hot enough a very little use of the blow-pipe will be necessary. The solder will flow nicely just where you want it; you will feel cool, calm and pleasant toward every one, and could even keep your temper if a patient should come in and say her teeth (that you had made the week before) "felt like a lot of broken dishes in her mouth, and she couldn't chaw on 'em no way, not even soft vittles let alone crackin' nuts."

I use Dr. Melotte's blow-pipe which is very convenient and efficient, but remember it is not so much the blow-pipe as the blower on which the success of the operation depends. Another little contrivance I am using in the laboratory which I find fills a long felt want, is a bench block patented by Dr. Magnus and manufactured by the S. S. White Co. It is a soft rubber block held in an iron frame. The rubber offers a surface that clings to the teeth and holds the case firmly while filing, obviates the danger of fracture from the *shiver* of the file and is noiseless. It also has a small polished anvil on the iron frame that is often very convenient. I know of nothing in the laboratory that "fills the bill" more completely.

MECHANICAL DENTISTRY.

CONCERNING this old subject, much has been written and rewritten, for ages, and still new features continue to present themselves for reflection.

If our forefathers could come back to earth and examine the many modern arrangements that have been substituted for the natural organs, would they not exclaim with wonder and admiration at the many contrivances of art, which man has achieved in this particular branch?

In this age of reflection, intelligence, and improvements, teeth should rarely be extracted, and this is fully demonstrated by the many successful methods of conservative dentists.

But, do what we may, and work as intelligently as we can, with all the conservative appliances and methods which are procurable, teeth will be sacrificed and lost, and some method of restoration must be found.

By an accident, when vulcanite was discovered and placed on the market as a competitive substitute for the noble metals to be used for dental purposes, we all rejoiced at the announcement. It was indeed a boon to patients of small means, and has been a source of great comfort to millions of people. But though it has filled a long-felt want, we are all familiar with the disadvantages and injurious consequences arising from the use even of the best constructed and finished artificial pieces. Rubber sore mouth is not a myth, as many fanatics seem to believe; and whether it is caused by the coloring matter or non-conductibility of the rubber, we can, by examining a few mouths, find sufficient proof that irritation does exist, to a great extent, beyond a doubt. This proof can be further demonstrated by carefully noting the change which will come over the mucous membrane of the mouth when, from any cause, the patient is deprived of the use of the plate for a few days. The irritant removed, the soft, flabby condition soon disappears, and the gums and tissues take on a healthy, firm appearance. Crown and bridge-work has come to our rescue, and is, beyond a doubt, the ideal substitute for natural teeth. When well constructed, under favorable circumstances, it comes nearer to restoring the mouth to a normal condition, gives more comfort and satisfaction than any substitute

which has been devised. It is a lamentable fact that a great many skillful operators, being located in small towns, are deprived of gas and other conveniences almost essential for doing this class of work. However, this difficulty is, to some extent, obviated, as the work may be sent to a specialist in the large cities, who do this work, to be soldered and finished. By this means bridge-work is practically placed within the use of all. Rubber must take a back seat, for where, from the conditions of the mouth, a plate is rendered necessary, other materials in the shape of cheaper metallic substances are coming into use. Aluminum is destined to work a revolution in mechanical dentistry, and gold is being used to a greater extent than it has been for some years.

Dental alloy, or alloyed platinum, makes a good base for a plate, and while it works a little stiff it has the necessary qualification of being cheap.

We are glad to see the profession turning their attention to this long neglected though no less important branch of dentistry. —M. R. C. in *Dental Annual*.

BRIDGE-WORK EASY TO REPAIR.

By almost any good method of construction, the bridge in position offers an ominous appearance when the patient has succeeded in breaking off a porcelain face "chewing soup," or "biting ice cream." In comparison with other service the bridge worker's fee is large, not to say excessive. Persons who can afford the luxury, are rich enough to travel, and not infrequently visit the metropolis. Thus we in this section see more than our share of broken bridges. If the piece were readily detached, a tooth could be replaced for from five to ten dollars, as circumstances indicated. But if an hour must be spent in partly destroying the attachments, and that amount of extra repair must be done before the piece can be replaced, the affair is different. The fee must be greater; yet, notice, that the benefit to the patient is the same in either instance. Dr. F. T. Van Woert of Brooklyn has solved the problem. His method is as follows: The tooth chosen must have the pins longitudinally placed. To these a piece of Gib wire (drawn triangularly in shape) is riveted, the apex of the triangle towards the tooth. With an instrument of his invention a dovetail, which exactly fits over the wire, is

made in the platinum to be used as a backing. The tooth being slid into the slot thus made, is fitted to whatever form of root attachment the operator chooses, and waxed into suitable position. The tooth is then removed and the backing and pivot attachment invested and soldered together. Thus is produced a crown with a removable porcelain face, which is eventually held in position with cement. In the construction of large pieces, two sets of teeth should be fitted into position, one set being cemented to the bridge and the duplicate given to the patient. Thus at any time a tooth could be replaced by any dentist in half an hour. Or where no duplicates are made the operation could be as quickly done by any dentist acquainted with the method.—R. OTTOLENGUI, *Dent. Review*.

TO INSERT A PIVOT TOOTH WITH OXIDE OF ZINC

And have a thoroughly tight union to tooth substance and metal, I have found the following method the most lasting, and if properly carried out, the easiest to the patient, causing no pain or after troubles :

Prepare the canal thoroughly and antiseptically at first visit ; on a point that will go to the apex roll a cone of gold foil, carry it to the end condensing first with hand-pressure following by the mallet.

When the pivot or crown is ready for insertion, syringe out canal with water as hot as patient can bear it ; fold absorbent paper around the parts near to be operated on, and dry the canal.

Have ready a cone of cotton on an instrument with the phosphate of zinc saturated, also dampen your pivot or crown with the same ; mix your oxyphosphate moderately thick, and commence by filling the root, it being previous moistened with the phosphate ; all excess of moisture will be absorbed by the phosphoric acid ; the mixed cement will be found to follow the course of the moistened surface, retarding for a few moments the setting, giving time for the adjustment of the crown to its exact position. When accurately in place apply a heated metal surface, such as a large faced burnisher, to the tooth, taking the precaution of putting a layer or two of bibulous paper over the tooth to prevent sudden shock or cracking the porcelain by over-heating, and it will be found to harden the cement in a very short time without disturbing the crown from its position.—DR. GENESE.

A SIMPLE METHOD OF CONTOURING A CROWN.

DR. E. B. WHITE claims that the simplest and quickest way of making a contoured crown, after having perfectly fitted the band to the tooth, is to hold the band between the thumb and index-finger of the left hand, with the cusp end outward, and insert the narrow beak of the half-round pliers a little more than half-way, gently but firmly pressing outward with the end of the beak, at the same time drawing inward with the other beak, and by going carefully around the band in this way it can be very readily bulged at and on either side of the center, and contracted at the cusp end, thus giving a natural contour. The end is then faced by holding it on the side of a corundum-wheel. A piece of platinum about No. 35 is cut a little larger than the end of the band and made flat, and four globules (of the same metal used for the band) are placed upon it in proper position to articulate with the occluding tooth, and fused until the platinum is covered, but not enough to level the mass of metal, which should remain prominent for the cusps. Then a small oblong piece of the same metal should be attached across each end of the now formed cusp-plate, the platinum ground off with a corundum stone, the flat side held up with the pliers, and the surface end of the band placed upon it and united by placing a small amount of solder with flux in the center and holding in a Bunsen flame. The cusps are then carved with suitable burs, and burnished after smoothing the edges of the "cusp-plate."—*Cosmos Report*, 1st Dist. So.

ARRANGEMENT OF AIR CHAMBERS.

WHEN we look for the forces which operate to displace a plate from its place in the oral cavity, we find these forces come to a focus just behind the rugal, on the median line, and to counteract their effect, and make the plate steady in the mouth, we must apply pressure on this portion, which is from the rugæ to within about one-fourth of an inch from the edge of the plate. Some place the chamber over the rugæ. This is a bad practice, because the irregularity and roughness causes the edges of the air-chamber to fit badly and sink into the flesh. Again, when we bring the chamber too near the point, we find a slight yield-

ing of the gums in using the incisors, and the plate tilts, throwing the posterior edge down.

In partial and full sets we leave a margin of one-fourth of an inch between the chamber and edge of the plate.

If it be the first plate worn, it is best to make the chamber quite small, as each plate that the patient wears must have a larger chamber, and the bearing surface of the plate is decreased in proportion to the increased size of the chamber.—DR. B. N. BAILEY, *Items*.

SOFT RUBBER-LINED LOWER PLATES.

VERY satisfactory results are obtained in lower plates for artificial teeth by lining them with soft or palate rubber, and letting it overlap the edges of the plate slightly. Great care must be taken in "waxing up," making the base or model plate exactly as the finished plate should be. The surplus soft rubber can be trimmed off with scissors where necessary. This method makes a lower denture comparatively free from irritation, and in most cases it will adhere quite as firmly as an upper plate.

An excellent and quick way to mend broken plaster casts and impressions is to paint the broken surfaces over two or three times with very thick shellac varnish, and at each application to burn out the alcohol over a flame. When the shellac is sufficiently soft, press the parts together, and hold in position while cooling. It will be as strong as it was before broken.—DR. G. H. FULLER in *Dent. Advertiser*.

BRIDGE-WORK.

THE most satisfactory form of sectional dentures (bridge-work) secured by crowns are made of gold and platinum, "I" or "L" bar, each end soldered to the crowns, and then a correct articulation obtained and rubber teeth used; the space between the crowns entirely filled with rubber, resting upon the gum, enveloping the gold and platinum bar, and articulating against the occluding teeth. I have used this form for many years.—WM. N. MORRISON, *Archives*.

TO REMOVE RUBBER FROM TEETH.

SHOULD it be desired to remove teeth from rubber, either pin or pinless, saw the blocks off close, and put them in pure *nitric*

acid. The rubber will be dissolved, and the teeth look new, and all trace of discoloration disappear from teeth or pins.—DR. D. GENESE.

GOLD CROWNS.

DR. OTTOLENGUI makes gold crowns without dies by putting a band around the tooth to be crowned, making it the length the crown is to be, then puts a piece of platinum plate into the open other end; flows gold over the top; tries it in the mouth; grinds it to the occlusion, and carves up the cusps.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

CORK POINTS FOR POLISHING.—Put a piece of cork on the screw mandrel, fasten in hand-piece, run the engine; with a sharp knife you turn in a few seconds one of the best devices for polishing teeth or fillings.—DR. B. H. CATCHING, Atlanta, Ga.

ANCHOR POST.—Cut off a toilet pin near the head, bend the end at a right angle, drill a hole in the buccal surface of first or second molar, plant the post with cement. Allow the pin head to extend about one thirty-second of an inch. With this simple arrangement you have the best possible anchorage for regulating appliances. No soreness, no inconvenience.—DR. B. H. CATCHING, Atlanta, Ga.

PERIOSTEAL INFLAMMATION.—I have found, sometimes, after treating sore teeth for several days without giving relief, and where the trouble was somewhat obscure, and had probably been diagnosed as periosteal inflammation, or something of a kindred nature, that a pill of calomel, 2 grains, soda bi-carb., 3 grains, taken just before retiring at night, brought things all straight next day. Try it on your next patient with a sore tooth. It certainly holds good in malarial districts.—A. H. HILZIM in *Archives*.

ACTION OF PEROXIDE OF HYDROGEN ON THE TEETH.—The result of experiments seems to leave no room for doubt that neu-

tral or nearly neutral solutions of peroxide of hydrogen act upon dentine by destroying or dissolving the organic matter by which the lime-salts are liberated or their bond of union destroyed. At all events the agent in question should be used with some caution, and when applied repeatedly, or when used as a mouth-wash, as suggested by Busch, the necks of the teeth should be particularly watched and the use discontinued in case the disintegration begins to show itself.—DR. W. D. MILLER in *Cosmos*.

SOAP AS A DENTIFRICE.—I believe to be both beneficial and deleterious, paradoxical as it may seem. Beneficial so far as it possesses alkaline and detergent properties, and so far only. Deleterious on account of its mechanical influence upon the brush, rendering it too soft to produce upon the gingival tissues the proper amount of friction for stimulation, and also deleterious on account of its tendency to produce and nourish chromogenic bacteria. I therefore believe it to be correct to prohibit the use of soap in the mouth until the teeth and gums have received the proper amount of friction from a suitable brush.—DR. C. MITCHELL, *Dent. Review*.

COMPLETE YOUR WORK BEFORE DISMISSING YOUR PATIENT.—When the last of several fillings has been put in, don't consider the work completed without having cleaned and polished the teeth. Some operators will fill a number of teeth in the most skillful manner and then dismiss the patient with the assurance that the teeth are in perfect order. Yet calcareous deposits, "green stains," inflamed gums, and perhaps evidences of pyorrhoea are painfully present. Your professional services are not finished, gentlemen, until you have removed all deposits, polished the teeth, treated the gums, if necessary, and put the mouth in a wholesome condition so far as your best efforts can accomplish.—*Dent. Advertiser*.

THE ILL EFFECTS OF MOUTH-BREATHING.—I know the case of a child that has been under my care from birth. At birth, and up to the third year, the child had a perfectly formed and normal arch; but it acquired the habit of breathing through its mouth. The result has been that the muscles, in the effort of holding the mouth open in that way, are drawn down over the teeth, and the arch is decreasing in width and becoming narrow, so much so

that you cannot do more than place your finger in the centre of the arch. The child is now nine years of age. There has been a radical change in the shape of the mouth, and from no other reason than mouth-breathing and the force of these muscles on the side of the mouth.—*Cincinnati Med. Jour.*

PAINLESS SEPARATING OF TEETH.—Teeth can and ought to be separated with but little or no resulting soreness or pain. I think there is no excuse for the suffering many dentists inflict on their patients while separating teeth, preparatory to filling. The free use of rubber for such purpose is inexcusably cruelty. By the use of fibres of raw cotton drawn between the teeth, sufficient separation can be obtained in three days, giving the patient but little discomfort. When the teeth are very close, it may be necessary to use, at first, a thread or string. If the teeth are tender after the separation, I fill the space between them with oxyphosphate, which holds the teeth apart without pressure, and the following day they will be free from soreness. I urge those who have not made such use of oxyphosphate to try it.—P. FISHER in *Items*.

CAREFUL PREPARATION FOR FILLING.—Unless certain conditions are observed, decomposition continues in teeth which are filled with metallic fillings. Dryness is essential; that is, if the plug is imperfect, or the dentine too porous to prevent fluid circulation, thermal changes through the moisture excites sensibility and in time destruction of the surrounding tissues follows. Amalgams which contain copper and silver, often by the oxides and sulphides arrest decay in frail teeth, but good amalgams, or rather such as we choose to insert, as well as gold, need to be insulated, or so inserted that the porous dentine and the irregularities and angles of the cavity are filled with some indestructable varnish, the only method to my knowledge which will preserve an amalgam filling bright upon the inner or wall surfaces. One thing is certain; when amalgam remains bright next to dentine, there is no decomposition going on.—DR. S. B. PALMER.

CHLORIDE OF SODIUM IN FACIAL NEURALGIA.—In the *Edinburgh Medical Journal*, MR. GEORGE LESLIE claims that nearly every case of facial neuralgia, toothache, and earache, as well as neuralgic headaches, may be cured by the application of powder-

ed chloride of sodium, common table-salt, to the nasal mucous membrane. The salt may be used by the patient as a snuff, a pinch being taken into the nostrils of the affected side, or it may be applied by means of the insufflator. If we examine the list of cases which Mr. Leslie reports, three of supraorbital neuralgia, five of toothache, three of facial neuralgia, three of nervous headache, one of neuralgia following herpes, one of neuralgia accompanying glossitis, cephalalgia accompanying tonsillitis, and one of bronchial asthma, it would appear that chloride of sodium possesses unsuspected properties as a universal panacea. We are naturally inclined to be sceptical as to the properties of a remedy for which so much is claimed, though it is possible that there may be a good deal of truth in Mr. Leslie's claims for common salt.

MEDICATION FOR PYORRHOEA.—We have used an alcoholic solution of salicylic acid for sometime, as one of the remedies for treatment of pyorrhœa alveolaris and inflamed gum margins, with fair success, but have always found it difficult of application, owing to its tenency to spread to adjacent parts. In experimenting to obviate this spreading proclivity, and at the same time to further the remedial properties of the medicament, we have settled on the following mixture and have found it to be, after six months' trial, a really useful corrective:

R	Salicylic acid crystals—alcohol, <i>q. s.</i> to make	
	saturated solution	- - - - - 3 j
	Oil Eucalyptus	- - - - - 3 vj

The salicylic should be made from oil of wintergreen, and by some such reliable makers as the William S. Merrell Chemical Co., of Cincinnati, Ohio. The salicylic-eucalyptus preparation is best applied to pyorrhœa pockets by a wisp of cotton wound on a flexible broach. It does not spread, is agreeable to the patient, and is efficient in its results.—*Dent. Advertiser.*

MATERIALS FOR ROOT FILLINGS.—It is fallacious to fill the roots of teeth with oxychloride of zinc; it is likewise fallacious to fill with wood, cotton, or any gummy substances soluble in alcohol. It is fallacious to fill the root of a tooth with any substance which is capable of absorption of a gas. I make that general statement. I would like you to know, if you are not aware

of it, that it is impossible to make a vitreous body so completely glazed but what gases will pass through it.

Experiments were made before the Chemical Society of New York with reference to sewer pipes, tiling, glazing, etc., and Professor Doremus proved that sulphuretted hydrogen and phosphoretted hydrogen would pass completely through glazed pipes. In consequence of the absolute law, the positive demonstration of that fact, it is fallacious to fill the roots of teeth with anything that is an absorbent. You can fill them with gutta-percha if you want to, that will not absorb moisture or gas, the whole world to the contrary notwithstanding.—DR. A. W. HARLAN, *Dent. Review*.

MEDICAMENTS.—All cavities which have required no other treatment should be wiped out with a slightly escharotic antiseptic, and afterward thoroughly dried prior to filling. For this purpose I am greatly pleased with a combination of creosote C. P., oil of cloves, oil of cassia, and vol. ex. of eucalyptus. This brings us to a consideration of some of the medicaments used by the dentist. First, none but the best, and those having a known and permanent chemical formula, should ever find a place in our medical armamentarium. 'Tis true the dentist, from the nature of the conditions he is called upon to treat, and also from the surroundings of those conditions, necessarily must use strong medicines, some having a powerful action, as well as an almost unbearable odor. In regard to overcoming the last of these attributes, it is my practice to keep all of my medicines in one close and dark case. In that case I keep a very small cup containing finely pulverized recently-parched coffee, to be removed every two weeks. As a deodorizer it is effectual. I also put a small quantity into such medicines as are especially odorous. It does no harm, in fact it is possible it may do some good, as recent investigators are now ascribing to it a slightly antiseptic property.—DR. E. L. CLIFFORD in *Dental Review*.

DENTAL EDUCATION.—In a paper on The Fallacious Theories and Practices of the dentist of to-day, read before the Chicago Dental Society, DR. J. W. WASSALL says: It is a fallacy for the Faculties not to check the present tendency to over-crowd the profession, by discriminating against the undesirable recruits.

It is fallacious not to admit that the profession will more rapidly grow to greater usefulness by choosing recruits from the

more enlightened and educated classes of society. The time has arrived when a true professional spirit should possess us, and it were best if even a previous academical or university training could be insisted upon, as is at present the case in European countries with regard to the profession of medicine. A proper discrimination in accepting matriculates or office students will protect the profession against much discredit and quackery, and at the same time do a genuine service to those who would succeed better in other vocations.

It is likewise a mistake for colleges to encourage mature men, who have failed in business or other professions, to enter dentistry. These bankrupts are usually attracted by the belief that their fortunes will be resuscitated, instead of being impelled by the spirit which should actuate true professional men.

Another fallacy, the results of which are quite apparent at times, is the disposition to multiply dental colleges, rather than to unite all efforts in improving those already in existence.—*Abstract Dental Review.*

HOW TO SPLICE ENGINE BANDS.—DR. GEORGE A. MAXFIELD says: To make the splice: Measure the exact length the band must be when spliced, mark it, then cut off the band say seven inches longer. This extra length is taken up in the splice. A splice six inches longer is stronger and runs smoother than one only four inches long. Unravel about an inch of each end of the band. Take the needle and pass the bow into the band where you have marked the end to be, then pass it through the centre of the band one-half of the extra length, and then out again. Take the other end of the band and insert into the bow of the needle just enough to hold, and pull it through and out where the needle first entered. Treat the other end of the band in the same way as the first and draw the free end through. Smooth out the splice, and cut the ends so that they will come inside of the band, and your splice is finished. If you wish to make the splices smoother, roll it between to pieces of wood. If your band has a *core*, it requires more painstaking in making the splice; yet it is easily done. First draw out the core from each end the length the splice is to be, say six inches, and so manipulate it as to have the ends come inside the band, exactly where the core has been cut. If you are not particular about this, you will have a weak

spot at each end of the splice. If you are particular in splicing this kind of a band, you will hardly be able to detect the splice after it is finished.—*Int. Jour.*

AMMONIA IN COCAINE-POISONING.—A case of poisoning by a very moderate quantity of cocaine is reported by Dr. GOLOVKOFF, in the Proceedings of the Caucasian Medical Society, where ammonia was used with good effect to restore the patient. The patient was a somewhat delicate woman, who was suffering severely from toothache. The pain becoming unbearable, Dr. Golovkoff injected 15 minims of a two per cent. solution of the hydrochlorate of cocaine under the skin of the left cheek, which gave relief for three or four hours, when the pain returned as acutely as ever. A second 15 minims were injected, and in about five minutes' time the patient became restless, her pupils dilated, the surface of the skin became pale, the pulse and likewise the respiration became rapid, and shivering came on; the respiration soon ran up to 200 per minute, and was labored. A curious effect, too, was produced on the sounds of the heart, causing them to be audible at the distance of two paces from the patient. There was great pain over the cardiac region and back, together with a dread of death and convulsive movements of the limbs. There was some liquor ammoniæ at hand, and this the patient was given to smell, and a few drops were given internally every five or ten minutes. Amyl nitrite was also employed, but the latter seemed to do more harm than good, while the ammonia soon brought the pulse and respiration, and indeed the general condition of the patient, into something more like their natural condition, so that in about a couple of hours she had quite recovered. Dr. Golovkoff remarks that the only case he has been able to find in medical literature where ammonia was used as an antidote in cocaine-poisoning was one by Dr. Gooding, of Barbadoes, reported in the *Lancet* of 1888, vol. i. p. 394, and copied into the *Meditzinskoe Obozrenie*. (This was a case of a negress who had developed alarming symptoms after less than half a grain had been injected into the gum; she was treated by hypodermic injections of ether and ammonia.)—*Lancet*.

PLASTER MODELS.—DR. H. W. MORGAN, Nashville, Tenn., says: To make a hard smooth plaster model. Let impression (I use plaster) dry, give it a thin coat of shellac varnish, or sandarac

colored with dragons blood; after this is dry, immerse in clear water until it is thoroughly saturated. Mix coarse plaster rather thin, stirring well and jolting to drive out air bubbles and rotten plaster to the top, which latter should be poured off. The impression cup should now be held in the left hand with water filling all depressions, and impressions of teeth if any, and filled by lifting the plaster out on the spaula, being careful to get the plaster from the bottom of the vessel in which it has been mixed. Begin at the heel of the impression on one side, forcing the water out on the other. I sometimes upset the cup and pour all the plaster back into the bowl that will run out and begin again to fill. Having built it up as high as I desire my model, I upset on a piece of broken glass to save cutting and secure a smooth flat surface. Usually an hour and thirty minutes is as long as is necessary for the plaster to harden, after which the impression may be cut away. No model is correct that can be jolted loose from the impression, as the plaster has certainly shrunk away from it.

By following the above directions a model is secured that is not only free from imperfection, but actually presents a glazed surface, and if coated with liquid silex diluted with water (I pour off from the bottle a small quantity into a second and add as much water and use this instead of that furnished by dealers), and allowed to dry just before packing, the plaster does not adhere to the rubber and the rubber presents a finished surface that cannot otherwise be obtained unless the surface of the model is covered with tin foil.

In investing use liquid silex to prevent sticking, treated as before instead of varnish and oil, or soap, it is much cleaner and just as effective.

Models made as I have described of coarse plaster, may be used after standing months, but all should be saturated with water before investing, or water that is necessary for hardening the newly mixed plaster will be absorbed.—*Dent. Headlight*.

TRANSMISSION OF DISEASE BY DENTAL INSTRUMENTS.—As all dentists know, any material which has been in contact with the secretions of syphilitic lesions, or the blood of a syphilitic, during the active stage of the disease, may prove the medium of communication of the malady to a healthy person, provided, only that the substance so contaminated is brought into contact with

a lesion, however slight, of the skin or mucous membrane. Hence the importance of keeping all dental instruments in a clean and aseptic condition as all well-trained surgeons do. No punishment would be too severe for the dentist who neglects to clean every instrument immediately after he uses, or before he operates on another patient with it. The following cases will illustrate the importance of the subject:

August 17, 1888, Miss F. consulted me about an eye trouble and she stated that her throat and gums had been very sore for some days. On examination I found that she had a bad case of iritis (both eyes), glandular swelling and a coppery papular eruption distributed over the face and body. The age and modest manners of the young lady made it difficult for me to approach the subject without embarrassment, although I was positive that I had made a correct diagnosis. I desired to know on what part of the body the initial lesion appeared and if it had been properly treated. Being a very intelligent young woman she observed that I was puzzled and began to talk more freely. She stated that the dentist extracted a tooth for her about three months before which he cut around with a dull knife and the wound had never healed, although the dentist had treated it a number of times and she had applied ever so much tincture of myrrh, etc. I examined the gums and found a chancre where the cut had been made. The syphilitic virus had been carried into the wound either on the knife or forceps.

On September 11, 1888, a young gentleman aged about 22 years, consulted me about a sore on his lower lip and stated that the family physician had prescribed lip salve and which had always cured the sores he had on his lips before, but did not appear to do this one any good, and with a bright smile on his face he said he had been referred to me by Miss F. But few questions were necessary to elicit all the information I desired. It was evident that the chancre on his lip had been acquired by direct contact through the act of kissing.

The couple have been married about ten months. The young wife is now pregnant and it is only a matter of a few weeks when she will give birth to a syphilitic child which will be a monument of the dentist's inability and carelessness. I report the case for what it may be worth. Too much care cannot be exercised by dentists as well as physicians in keeping their instru-

ments clean, which is easily accomplished. I never neglect to clean and sterilize every instrument I use in the throat, nose, eye or ear, immediately after using it. The patient being a minister of the gospel or a deacon in the church does not change my habit. Syphilization and civilization are traveling together. Syphilis is encountered everywhere—in the palace of the mighty—in the hovel of the slave. It infects the infant before birth and attends the gray hairs of age tottering to the grave.—DR. J. P. PARKER, *West. Dent. Jour.*

Societies.

"Wherewith one may edify another."

MEETINGS.

Iowa State Dental Society meets annually. Next meeting in Dubuque, on the first Tuesday in May, 1890.

Texas State Dental Association meets in Buton, first Tuesday in May, 1890.

Northern Ohio Dental Association meets annually. Next meeting at Canton on the second Tuesday in May, 1890.

Georgia State Dental Society meets second Tuesday in May, 1890, at Tybee.

Illinois State Dental Society meets at Springfield, second Tuesday in May, 1890.

Nebraska State Dental Society meets annually. Next meeting third Tuesday in May, 1890, at Beatrice.

The Dental Society of the State of New York meets annually on the second Wednesday in May. Next session at Albany, May 8, 1890.

Kentucky State Dental Association meets annually, first Tuesday in June, 1890. Next meeting in Louisville.

Michigan State Dental Association meets annually. Next meeting at Jackson, June 3, 4 and 5, 1890.

Indiana State Dental Society meets next at Lake Maxinkuckee on the last Tuesday of June, 1890.

North Carolina State Dental Society meets in Wilmington, on the fourth Wednesday in June, 1890.

SOUTH DAKOTA DENTAL SOCIETY.

THE seventh annual meeting of the South Dakota Dental Society will be held in Yankton, June 3d, 4th and 5th.

F. O. SALE, *President*,
Huron, S. D.

MISSOURI STATE DENTAL ASSOCIATION.

DEAR DOCTOR:—We wish to call your attention to the next meeting of the Missouri State Dental Association, which will be held at Pertle Springs, July 8, 9, 10, 11, 1890.

No effort will be spared to make this meeting one of the largest and most interesting in the history of the association.

The American Dental Association will meet in Missouri next August, and it is especially desirable that we have a large attendance at our next meeting so that we may make proper arrangements to receive the members of the American Dental Association in a manner that will reflect credit upon the dentists of Missouri.

Now is the time to make your plans so that you may be able to be with us, and we earnestly solicit your presence.

Fraternally yours,

J. F. McWILLIAMS,

W. L. REED,

W. H. BUCKLEY,

Ex. Committee.

OHIO COLLEGE OF DENTAL SURGERY.

THE forty-fourth annual commencement of the Ohio College of Dental Surgery, Dental Department, University of Cincinnati, was held at Scottish Rite Cathedral, Wednesday, March 12, 1890.

The following comprised the graduating class:

F. E. Adams, O.; B. Q. Ayres, O.; E. G. Beal, Pa.; M. A. Becker, O.; H. R. Bell, O.; W. M. Bogue, Ind.; C. E. Booren, Minn.; H. C. Brown, O.; S. A. Brown, Pa.; D. D. Cunningham, Pa.; C. C. Carle, O.; W. J. Crampton, Can.; F. L. Cauch, Cal.

J. H. Clark, O.; H. E. Crocker, Conn.; I. S. Carter, W. Va.; J. J. Donaldson, Pa.; S. A. Donaldson, Ky.; M. M. Eble, Ky.; A. Eicke, Ger.; B. J. Emery, O.; H. Geiger, O.; H. P. Gillispy, N. Y.; W. O. Girardey, O.; W. C. Griffith, O.; D. E. Hartwell, Ind.; W. H. Hayden, O.; C. L. Hill, O.; W. H. Houser, O.; A. G. Herr, Mich.; V. N. Jones, W. Va.; W. I. Jones, O.; I. E. Josep-his, Pa.; A. Katayama, Japan; S. D. Laughlin, Ky.; J. W. Leahy, O.; A. J. Lee, Ky.; R. Morgan, Jr., Mo.; F. E. Morgan, O.; J. G. Macy, O.; R. McClanahan, Ind.; H. E. McClelland, O.; T. H. McClure, Pa.; J. E. Nichols, Can.; J. G. Parr, O.; C. C. Pollitt, Ky.; J. H. Pollock, O.; A. B. Purdy, Can.; E. W. Ream, C. L. Rose, Minn.; F. S. Rose, Can.; M. C. Saul, Ger.; F. N. Seeley, O.; L. S. Seeley, O.; J. W. Shane, O.; C. F. Shober, Can.; J. A. Shober, Can.; A. Sidener, O.; J. A. Sinnett, O.; M. S. Smith, Kan.; C. H. Thompson, O.; W. H. Wernett, O.; L. Wilkie, Mich.; E. J. Witherspoon, Mich.; B. A. Wright, Pa.; J. F. Cope, Pa. Total, 66.

Number of matriculates during the year, 161.

Prizes awarded were as follows: For the best general examination, B. A. Wright, of Pennsylvania. For the best attainments in operative dentistry, R. McClanahan, of Indiana. For the best attainments in prosthetic dentistry, A. G. Herr, of Michigan.

DENTAL DEPARTMENT, UNIVERSITY OF IOWA.

THE eighth annual commencement of the dental department of the State University of Iowa, was held on Monday, March 10, 1890.

Graduates: T. G. Albin, Mo.; J. V. Anderson, Pa.; F. J. Bethel, Col.; A. D. Barker, Ia.; B. Bement, N. Y.; C. E. Booth, C. M. Cobb, Ia.; C. E. Coleman, Ia.; G. W. Cook, Ill.; C. Dorman, Ia.; A. Dingwell, Ia.; J. H. Dorival, Minn.; F. E. Davoll, Dak.; J. W. Gluesing, Ill.; N. Glasgow, Ia.; C. H. Gibson, Minn.; R. H. G. Huntley, Ia.; J. G. Hildebrand, Ia.; J. W. Hubbard, Ia.; Harriet M. Jones, Ia.; W. H. Jallings, Minn.; C. Kremer, Minn.; F. B. Kremer, Minn.; R. E. Lamoreaux, Neb.; F. H. Low, Ia.; W. B. Mandeville, Minn.; E. Morton, Ia.; W. F. McDonald, Ia.; C. R. McCandless, Ia.; W. E. Maybee, Ia.; G. C. Marlow, Wis.; E. H. Naumann, Ia.; H. O. Rogers, Ia.; G. W.

Schwartz, Ia.; S. L. Seeley, Ia.; R. Summa, Mo.; W. H. Simpson, Ia.; C. D. Tiffany, Ia.; E. A. Taylor, Ia.; P. L. Van Winter, Ia.; H. Van Winter, Ia.; T. B. Wallace, Ia.; Hattie E. Wells, Ia.

Matriculates for the year, 120.

CHICAGO COLLEGE OF DENTAL SURGERY.

THE eighth annual commencement of the Chicago College of Dental Surgery, dental department of Lake Forest University, was held at the Chicago Opera House. Dr. Brophy read the annual report of the college, in which he showed its prosperous condition. From two graduates the first year they had grown until to-day they had a class of sixty. They had become a department in Lake Forest University and were proud of it. Then the degrees were conferred and the diplomas awarded by the faculty. The faculty address was delivered by Dr. A. W. Harlan. W. C. Roberts, D. D., LL. D., President of Lake Forest University, delivered the closing address of the afternoon.

The class of graduates is as follows:

C. E. Austin, B. S.; F. D. Axton, J. D. Banes, D. W. Bottorf, J. H. Chase, J. W. Dostal, W. E. Emmons, L. D. S.; H. E. Follansbee, O. E. Gibson, L. M. Goodearle, E. E. Gould, F. A. Green, E. G. Howard, F. S. Heer, W. L. Jones, R. Kempter, H. E. Kinney, F. Kolar, G. W. Toles, E. L. Knapp, F. A. Lane, J. T. Lennington, M. Leininger, C. B. Magill, J. R. Maguire, G. B. Martin, A. G. Moffett, J. D. Moore, J. G. Pflaff, G. M. Phelps, M. D.; J. J. Pountain, H. M. Prickett, J. W. Putnam, F. K. Ream, E. W. Russell, O. A. Ruthenberg, C. C. Ryan, G. J. Roberts, A. B. Fernald, F. E. Salisbury, F. S. Schadel, J. A. Shoemaker, A. G. Seeglitz, J. H. Smyser, M. W. Swartz, F. R. Stuggitt, L. S. Tenny, F. S. Tinslar, C. N. Trompen, R. B. Tuller, O. Thompson, J. L. Ubellar, J. Q. Waddell, C. H. Waterhouse, M. D.; C. E. White, H. C. West, W. H. C. Wiesler, C. A. Whitenack, E. E. Williams, G. E. Zinn, B. S.

In the evening the alumni association gave their eighth annual dinner at the Leland Hotel. Dr. Brophy presided. President W. C. Roberts, D. D., LL. D., responded to the first toast, "The University and College." Dr. Edmund Noyes

responded to the toast, "Dental Education of the Future." "The Graduate and His Relation to Dental Literature," was responded to by Dr. A. W. Harlan. "Dental Legislation, Beneficial and Detrimental," was responded to by Dr. C. R. E. Koch. "The World's Exposition and the Dentists of Chicago," was the subject to which Dr. Lewis Ottoby responded. "The Profession Abroad," was responded to by Dr. J. A. Swasey. "The Alumni Association," fell to the lot of Dr. T. A. Broadbent. "The History of the Class of 1890," was the last toast, and was responded to by Dr. L. S. Tenny. "The Class of 1890," by Dr. F. D. Axton. "The Dental Protective Association," by Dr. J. N. Crouse. "Poem to the Class of '91," by Dr. F. A. Green. Presentation of cane to Dr. N. D. Edmonds, by Dr. R. B. Fuller, on behalf of the class of '90.

UNIVERSITY OF MARYLAND—DEPARTMENT OF DENTAL SURGERY.

THE annual commencement was held at the Lyceum Theatre, Wednesday, March 19, 1890.

Order of exercises was as follows :

Prayer. Music. Reading of Mandamus by the Dean, Prof. Ferdinand J. S. Gorgas, M.D., D.D.S. Music. Conferring of Degrees and Award of Prizes, by Hon. S. Teackle Wallis, LL.D., Provost of the University. Music. Address to the Graduates, Rev. Elbert S. Todd, D.D. Music. Class Orator, Harvey G. Glatfelter. Music. Benediction. Music.

Graduates, Class of 1890 :

D. Aiken, S. C. ; J. M. Ayer, N. C. ; J. R. Berry, Va. ; W. E. Beachley, Md. ; W. S. Boswell, Jr., Md. ; C. T. Breedlove, Ark. ; W. S. Brown, Jr., S. C. ; O. F. Byrd, Va. ; S. Cassard, Md. ; W. H. Collins, Va. ; S. G. T. Craig, Ky. ; W. W. Davis, Va. ; L. T. Emerson, Brazil, S. A. ; C. Felker, N. Y. ; H. J. Fenn, N. Y. ; I. W. Furman, N. Y. ; H. E. Glatfelter, Pa. ; C. C. Graham, Texas ; J. W. Graves, Mo. ; N. R. Hubbard, Pa. ; A. V. Huntzberry, Md. ; W. S. Hurlock, Md. ; R. L. Harley, S. C. ; W. A. King, Can. ; D. O. M. LeCron, Ia. ; J. L. Luke, Va. ; J. H. Marchant, Va. ; O. H. McDonald, Ga. ; J. E. McNeal, Md. ; T. P. Meyer, Pa. ; C. Mezger, Ph.G., Md. ; L. S. Mitchell, N. J. ; W. W.

Morgan, N. J.; C. G. Myers, N. Y.; G. H. Perrin, Can.; W. A. Pressley, N. C.; C. B. Renoe, Mo.; H. G. Steer, N. Y.; S. C. Sykes, Md.; F. F. Todd, Md.; C. B. Whelpley, Can.; C. E. Wogan, Pa.; G. Woolsey, Cal.; C. A. Wright, N. H.

Number of matriculates for session, 1889-90, 135.

University prize awarded to Harvey E. Glatfelter, of Pennsylvania. Honorable mention to George Perrin, of Canada.

DENTAL PROTECTIVE ASSOCIATION.

THE Dental Protective Association is progressing nicely. We have a large membership and a large amount of testimony in regard to crown and bridge-work, antedating all patents owned by the International Tooth Coown Co. The company dare not sue any member of the association, nor proceed with the old suits taken charge of by the Protective Association. We guarantee protection against any of their patent claims and to pay all expense of litigation. We expect to increase membership fee soon.

J. N. CROUSE.

INVITATION TO THE TENTH INTERNATIONAL MEDICAL CONGRESS.

IN accordance with the decision of the Ninth Congress at Washington, the Tenth International Medical Congress will be held at Berlin from the 4th to the 9th of August, 1890.

By the delegates of the German Medical Faculties and the chief Medical Societies of the German Empire, the undersigned have been appointed members of the General Committee of Organization. A Special Committee of Organization has also been appointed for each of the different sections, to arrange the scientific problems to be discussed at the meetings of the respective sections. An International Medical and Scientific Exhibition will also be held by the Congress.

We have the honor to inform you of the above decisions, and at the same time cordially to invite your attendance at the Congress. We should esteem it a favor if you would kindly extend this invitation to your friends in Medical Circles, as way may offer.

We beg to accompany our invitation by a copy of the Stat-

utes and Programme, as also by the List of the intended sections and their Special Committees of Organization.

Dr. Rudolf Virchow, President; Dr. von Bergmann, Dr. Leydon, Dr. Waldeyer, Vice-Presidents; Dr. Lassar, Secretary General. All communications must be directed to the General Secretary, Berlin NW., Karlstrasse 19.

Books and Pamphlets.

A GREAT POPULAR CYCLOPEDIA.—The last volume issued of Alden's Manifold Cyclopedias is fully up to the high standard of the preceding volumes, and readers will be pleased to learn the rapid progress the work is now making; strong financial allies have recently been secured in the publishing department, two large printing offices are now at work upon it, and the publication is to be hastened to completion with all the speed that abundant resource and energy can give it. A 40-volume Cyclopedias, including an Unabridged Dictionary of language, large type, seventy thousand illustrations—all for \$30.00, and even that in such easy installments as one pleases to ask, almost, is a great thing for the public! Specimen pages sent free to any applicant, by the publisher, JOHN B. ALDEN, New York, Chicago, and Atlanta.

BOOKS RECEIVED.

NEW MEDICAL DICTIONARY, by Geo. M. Gould, B.A., M.D. Philadelphia: P. Blakiston, Son & Co., Publishers. 1890. Price, dark leather, \$3.25; half morocco, thumb index, \$4.25.

TRANSACTIONS OF THE NEW HAMPSHIRE STATE BOARD OF HEALTH. 1889. I. A. Watson, Secretary.

Our Aftermath.

FRANK HAYTON, D.D.S., formerly of Florence, Italy, has located at Carbondale, Pa.

DENTISTS' SANITARY CUSPIDOR is something new. They have a waterproof paper lining which is renewed each day or oftener if necessary.

MARRIED.—On Wednesday evening, April 16th, at the residence of the bride's father, Dr. W. H. Sedgwick, at Granville, O., Mr. M. H. Watson, of Chicago, Ill., and Miss H. Lenora Sedgwick.

DR. E. G. BETTY, of Cincinnati, had his office and residence entered by burglars on the night of April 13th while the family was absent. The burglars were scared away without securing any booty by the return of the servant.

DR. GRANT MOLLYNEAUX, Prof. of Mech. Dentistry in the Ohio Dental College, and Miss Virginia Bailey, daughter of Samuel Bailey, Jr., Sub-Treasurer of the U. S. at Cincinnati, were married Wednesday, April 2, 1890.

DR. F. B. MERRILL, of Chicago, who lately married the daughter of a millionaire, has been sued by a discharged former office assistant for breach of promise of marriage. She asks \$25,000 damages. His defence is that it is a blackmailing scheme.

THE SIBLEY BUILDING.

A HANDSOME STRUCTURE ON FILBERT STREET JUST COMPLETED.

Four old buildings on Filbert street, opposite the Windsor Hotel, numbered 1214, 1216, 1218, 1220, have been practically transformed into a new structure named the "Sibley Building." Mr. Gideon Sibley, who for ten years past has occupied the upper floors of the southwest corner of Thirteenth and Filbert streets for the manufacture of teeth, a few months ago purchased the above dwellings, as well as those on Silver street, at the rear end of the lot, and has transformed the whole into one building, the principal portion of which is now occupied by Mr. Sibley as a dental depot and manufactory, while the rest is divided up into 50 light, roomy offices, every one of which receives ample light from outside. One suite of 10 rooms is so arranged that each one can be entered in turn without passing into the hall.

The dwellings were three stories high, but in the improved building an additional story has been put on. The floors of the first story have been lowered, and all the interior partitions and walls torn out, in order to fit up the building for the altered purposes. The front is handsomely ornamented with iron trimmings, and the first story is composed entirely of iron and glass, with the floor of the vestibule laid in mosaic. From the street the rejuvenated building presents quite an attractive appearance.

The building has a front on Filbert and Silver streets of 62 feet and 103 feet long. Mr. Sibley occupies the eastern side of the first floor, the store being 32 feet wide, extending the entire depth to Silver street. The front is filled in with large plate glass and the interior is handsomely fitted up in heavy oak and other hard-wood furniture and fixtures. It is occupied as a store and display room for every requisite in fitting out a dentist's establishment; also a shipping room, counting room and private office. The ceilings are very elaborately frescoed, and everything about the room is of a bright, cheerful character.

The rear building, fronting on Silver street, is occupied as the manufactory, there being half-a-dozen new furnaces of an improved character for "baking teeth." The machinery is operated by electricity, as is also the elevator. Every room in the building is supplied with both gas and electric light, and steam heat, and water closets and lavatories are on every floor.—*Philadelphia Ledger.*

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"A word fitly spoken is like apples of gold."—SOLOMON.

IMPORTANT LITTLE THINGS IN DENTISTRY.*

BY J. R. BELL, D.D.S., CLEVELAND, O.

I BELIEVE there is no calling whatsoever, made up of such an infinitesimal number of small things as our profession, any one of which if left out or forgotten proves more or less disastrous.

Naturally from force of circumstances we are made to devise, improve, invent, borrow, and sometimes steal ideas by which we may more perfectly accomplish our aims. There is a saying that is almost a proverb, viz., "A man is a fool who does not know when he has enough." This may apply to some men, but to the true dentist, never. Here a little, and there a little, gleaned from free intercourse are many times like the crude stone, rough and unfinished, but after a change of hands are made shapely and a fixed gem for all time. So with our rough thoughts enlarged upon, viewed by other minds become transposed into greater usefulness. And thus it is with an improved device or method, be it ever so simple or used only semi-occasionally, it is invaluable if it is an improvement and should be made known to

* Read before the Cleveland Dental Society, March 7, 1890. Published by request.

the profession, for it is by seeing objects differently that progress is made and often reverts good to the original inventor.

I fully realize my inability to do justice to the subject chosen in the short time allotted. I will not attempt to classify, but will give what may or may not be new or interesting.

I am encouraged in a simple though effectual method thus far, of operating upon the gums to produce a union between the same and the periosteum on the tooth after treating the gums, when the pathological conditions are favorable, and this is especially necessary in any case. It consists in gauging the gum margin 1-16th of an inch from the free edge with a sharp scalpel, cutting one line deep where there is thickness to admit of it; the lance being carried at angle 45° from the axis of the teeth and from left to right of the mouth, but never be allowed to extend through; should that occur our object would be lost.

The above treatment according to my little experience, accomplishes a long felt want in crimping the loose margins around the teeth and by producing acute inflammation and naturally expansion of the soft tissue at the desired point. Thus closing up the mouth of the diseased parts by which irritating secretions are excluded. Before this final operation, however, after dressing the pockets with proper medicaments, the application of a small amount of tannic acid and glycerine to the mouth of the pocket only, I think advantageous as it puckers the mouth of the pocket. I hope to be able to give a more detailed account of my theory, symptoms, and treatment, later.

Tannic acid and glycerine is effectual, applied to cavity sockets. Where there is excessive hemorrhage, or in case an immediate impression is necessary, but where a packing is required to check the flow of blood, in emergency a pellet of cotton, of suitable size, saturated with a thin solution of gutta-percha and chloroform is sure, but should be removed within twenty-four hours; otherwise it will become engrafted to the walls. A suitable pellet of cotton saturated with a thicker solution of the same makes a simple and effectual temporary plug for tooth cavities, previously drying the cavity, for it adheres to the walls, excludes the moisture, retaining cobalt or arsenic safely.

The same packed in the bifurcation of molars before adjusting, the rubber cloth will admit of perfect adaptation which otherwise would not.

Another use can be made of a gutta-percha pellet of cotton, and that is as a stopple in the rubber-dam, in case of accident or imperfection.

My wonder has been how others accomplish their object with but one spatula, so-called, and that used only for mixing cements; in practice a graduated set of these instruments are indispensable, the blades varying in size from $\frac{3}{8}$ to $\frac{1}{4}$ inch, and from 27 to 30 American gauge in thickness; length of blade $1\frac{1}{2}$ to 2 inches. The temper should be drawn before shaping the blade and only retempered by the heat produced in finishing, thus they are left flexible. I make use of these plain, simple tools as matrices in plastic facings, holding them often where there is no posterior tooth to sustain a regular matrice, or where a band would be impracticable. In exposing cavities to view, pressing the margin of the gum back and if bright they serve as a reflector where the mirror cannot. Inserting oblong pellets between the teeth to produce space for filling, adjusting ligature above margin edge, etc. If an amalgam filling has to be employed, I do not presume any one here ever uses it, Welch's No. 2 is by far the most satisfactory, it has a toughness of marginal edge, remains more perfectly adapted, finishes smooth and brighter and remains so. The final finish of any amalgam will be enhanced by the use of French crocus No. 0 paper strips for approximal surfaces, and cotton pellets or felt points for crowns and buccal ones. This, however, should not be final, but amalgam filling should be seen twenty-four hours after insertion or later, approximate surfaces polished with No. 00 emery strips, large fillings stoned, and fissures reduced with burs of proper size to a defined edge.

Burs after becoming unfit for excavating are most useful for cutting down the gold filling in a crown or buccal fissure. Alcohol used upon them prevents heat, and the cuttings are easily blown from the surface of the filling, as it dries quickly enabling close scrutiny and perfection of the case. By this means, too, all of the gold cuttings are finally taken from the rubber by the use of a spoon, one made from the metal back of a broken mouth mirror answers well; an astonishing amount of gold is saved in this way, at least enough in a year for a spring suit. These ideas might come under the head of "Dental Economics." Oiled strips may be burned and the gold of which much adheres thereto, saved. This idea is from Prof. Watling, Ann Arbor.

Five drops of the oil of bergamot to the ounce of lubricating oil disguises it, making it pleasant rather than otherwise to sensitive persons. Sanitas oil may be disguised with the same or some other essential oil.

Half grain of coffee grounds, either steeped or fresh, in the vulcanizer, destroys the sulphurous smell so disagreeable, if there is a slight leak where the operating room and laboratory communicate. Coffee grounds burned in the laboratory are a good deodorent in case of necessity.

I might continue these simple ideas indefinitely, but will defer them for fear of taxing your patience.

GOLD AND TIN IN SAVING TEETH.*

BY C. R. BUTLER, D.D.S., M.D., CLEVELAND, O.

AN old and interesting theme, yet ever new. First, because it has value; and then it must be ever new to the army of recruits that is added to the profession annually. And how shall they be able to take up improved modes and means of practice, unless these things are set plainly before them, as having passed the ordeal of time test, which is the prover of the faithful as well as the unfaithful efforts.

This subject has claimed considerable attention, more especially the past few years, the combination of the two metals, in the same fillings.

The chemico-galvano electric feature of the presence of the metals in the teeth, the writer will not attempt to discuss at this time, that feature of the subject having been brought before the profession by teachers of dental chemistry.

But we will take it up from a practical standpoint, and advantages observed after years of testing.

If some sixteen pages of argument in one of the leading journals can be given to prove the great value of guttapercha as an adjunct in dentistry, the writer will venture a few suggestions on the use of tin as a permanent filling in teeth.

How shall this be accomplished, for it is said that it wears out no matter how well it is put in. Let us see whether this be true:

* Read before the Northern Ohio Dental Society, at Canton, O., May, 1890

We will take for example proximal cavities in molars, or bicuspsids, decay up to or under the free margin of the gum. The dam being adjusted, the preparation of cavity should be made with as much care as for gold, with angles as square as practicable, with slightest possible bevel of side margins of cavity, whether it be a deep or shallow cavity, so there shall be no feather edge lap of metal on border of cavity when the filling is finished. Presupposing that working room has been secured, if possible would place a wedge between the teeth by the gum to hold them steady, then slipping a piece of steel down by lower margin of cavity, (the writer prefers an adjustable, rather than the closed band matrix). We are now ready to commence the impactment of the filling, whether foil or fibrous tin be used in mat, strip, or pellet, by the operator, the all important item is to have the metal packed into a solid mass, if this be done, close impingment upon the wall and border of the cavity will be secured.

It may not be out of place to mention the kind of instruments and force employed by the writer; the ordinary foot shape serrated points, (sample instruments shown), with hand force in most cases, the hand mallet is also a good adjunct.

Having filled one-fourth or half the bulk of the cavity with tin, cut shallow retaining pits and grooves, in the strong part of the tooth, and finish out the filling with non-cohesive or cohesive gold; it is not at all safe to depend upon the gold being driven into the tin alone for anchorage, to stand the force of mastication. But if the plan suggested be faithfully carried out, good safe contour fillings can be made.

One great cause of failure in the use of tin filling is, the operator does not start out with the idea that it is anything but an inferior material, and that fillings made with it are only temporary. But he that is fully imbued with the idea that the first and last object in filling teeth at all is to *save* them, and uses tin *a la* Corydon Palmer, (who gave the writer instruction and hints many years ago, of the possibilities of tin) will find that his works do follow for many years, not to condemn, but encourage to be more and more faithful.

All young subjects that require operations, the above mode of treatment of most cavities proximate and buccal, is to be commended, for it is conceded by the best of operators, that children's teeth, are better saved with tin, than with gold.

Tin has a fiber as well as gold, and should be cut with the fiber. No. 10 foil I prefer, taking a sheet in the hands with a to and fro movement, crimping it both ways, giving it a working property when cut into strips lengthwise of fiber, and rolled into soft cylinders of the size and length desired.

Do not think of applying to some manufacturer for made up tin, but learn to prepare it for the case in hand. There is too much dependence on these "made up" articles; they are often a misfit.

Some may decry this system of filling because it may be abused by the man that puts in more tin than gold, and represents to his patients that he is giving them gold operations. But that has the same degree of honesty that there is in representing that they are giving them first-class gold fillings, that fail to give the comfort and service that should be had from plastics.

This mode of operating is neither cheap nor does it admit of an inferiority of skill in the technique. The plea that is made by a recent writer against contour and in favor of face fillings, that time and tax upon patient and operator is greatly lessened, has but little force in cases where a contour filling is demanded. And the man that attempts to fill all teeth in the same manner, or carry out some pet system, has failed to comprehend the factors that have so much to do in making operations upon the teeth at all necessary, and is scarcely worthy the name of dentist in this active age of careful observation.

If we are members of a "learned" profession, the laity have a right to expect better services than was obtainable by their ancestors. We often speak with pride of the wonderful advances made within the past half or quarter of a century in the art and science of dentistry, but the query often comes to me, are we doing as much to-day with all the boasted knowledge of the minute structural make up of the teeth, and the almost endless fine adjuncts in the operative department to prevent and arrest decay of the teeth as the men that had to depend so largely upon their individual effort for ways and means to meet the demands for dental work?

Whether it be a chemical or mechanical effect the tin has upon the dentine, is still a mooted question. But we have observed that the higher the degree of vitality or predominance of animal matter in the tooth, the less it tolerates gold as a

patch! So putting the tin where the major part of the cavity is dentine, then finishing out the masticating surface where enamel is mostly the receiving surface of the gold, the teeth are better preserved than I did when all gold was used! In many cases a mere line of tin is used along the basal margin. I have never been in favor of folding or rolling tin and gold together, but use them in definite sections.

The mode and results as given here are from actual practice. After years of testing, whether it be considered orthodox to declare such a line of practice, matters but little. My aim has been and is to make operations that save. One more example and I close this article. Cases present where decay has made considerable inroads upon the proximate surfaces of the incisors, the structure of tooth is such that I should regard it the best kind of practice to open the cavities from the lingual surface. Secure as good borders as possible, fill with tin with a lining of non-cohesive gold under the face or labial wall to modify the blue appearance that the tin might give the teeth. The matrix may be used to advantage in most of these cases giving nature a chance under such fillings to harden the teeth.

No claim or care for priority is sought to be developed in this mode of using metals, as here presented. All operations in fact, are but temporary.

But after years of careful observation of the mode and means employed to reach this class of cavities by men of skill and integrity, with the results following. I do not hesitate to put myself on record in support of this mode of making permanent fillings with tin and gold.

COPPER AMALGAM—ITS ADVANTAGES AND PREPARATION.

Mr. President and Gentlemen:—My apology for bringing the subject of copper amalgams before you this evening, is that during the last three or four years, I have been more and more convinced of its utility, and have been glad to notice its gradual growth in popular favor and estimation.

Amalgams made from precipitated copper have been known and used for upwards of forty years; and while condemned on

several sides, have had strong advocates in favor of its partial, though not universal use for suitable cases.

The principal arguments against its use are—

1. The unsightly appearance caused by discoloration, either of the amalgam or the tooth itself.
2. Its softness compared with other amalgams, rendering a mastication-surface composed of it less durable than one composed of other amalgams.

With reference to the first objection to its use, there is no doubt that owing to the reckless use of this valuable agent in the front part of the mouth, and also partly to its faulty preparation, it had fallen greatly out of general use, many dentists having entirely given up its use. But while its color is certainly against it, all who have tried it will admit that in soft chalky teeth, especially where associated with a viscid state of impaired digestion, no filling material stands so well in the mouth. When we remember that any irritation of mucous glands is both a cause and a consequence of indigestion, partly by interfering with the physiological activity of the saliva in the primary motabilism of starchy food, and partly by mechanically entangling particles of food, and causing their retention and ultimate decomposition in the mouth itself, it becomes very evident that, at the gum edge of teeth, especially of lower molars, any amalgam of good antiseptic power must have advantages over less antiseptic amalgams as a preventor of further decay; and indeed in this situation, viz., as well as in inaccessible cavities, that is, cavities which by reason of their position are difficult to clear of all defective dentine, practice has shown that this material, by reason of its undoubted antiseptic properties, is frequently the most valuable that we can use to prevent further decay.

With reference to the second objection, viz.: its softness in comparison with other amalgams on masticating surfaces, there is undoubtedly something to be said, but still the difficulty can be obviated by finishing on masticating surfaces, either with gold or an amalgam of a higher grade, such Davis', Hallam's or the Standard Amalgam. Either method can be pursued at the time the filling is first inserted, or at a subsequent sitting when the basal portion has become hard.

I may say that I frequently line deep cavities with copper and finish with gold *at the same sitting*, obtaining thereby a

sightly filling, and securing at the same time all the advantages of the antiseptic copper. In large cavities in lower molars it is an easy thing to place some dry fillings of one of the tin compounds on the top of the copper amalgam, and by use of the burnisher, get a nice light colored surface which *does not often* discolor. In fixing crowns, we have *another* use for our Sullivan.

Personally, I always use platinum tubes in pivoting front teeth, and invariably employ this agent around the tubes, never yet having had one come out where the tube had been properly roughened to allow of the amalgam holding.

The posts of Bonwill crowns, fixed with this amalgam rarely give way. I have seen some beautiful porcelain crowns, specially made for Mr. Balkwill, of Plymouth, fixed by this method, which showed signs of remaining firm indefinitely.

The liability to discolor teeth, will always be a fatal objection to employing copper amalgam in the front of the mouth. In a few cases the enamel of the labial surface of a cavity in a canine may be lined with one of the white fillings, previous to finishing with this amalgam.

The power to discolor teeth may be reduced to a minimum by careful preparation of the stopping.

The older way of preparing it was by precipitating copper from a solution of sulphate, with mercury at the bottom of the vessel that contains it, by stirring the fluid with a bar of zinc.

A better way, and one that we now employ, is to substitute a clean *iron* bar for the *zinc* one, and leave it from 12 to 24 hours in a jar containing the solution. The iron bar becomes covered with a dull reddish flocculent precipitate having very little resemblance to copper. When a sufficient quantity of the precipitate is formed, it is then collected into another jar, and well washed by a stream of cold water running over it, until it becomes quite clean, as shown by the color of the water. When sufficient precipitate is formed it is ground up in a mortar with mercury until it begins to amalgamate. The amalgamation is hastened by hot water being used, to which a little sulphuric acid has been added, as the process of amalgamation takes place the water can be poured off. The sulphuric acid clears off traces of iron that may be in the precipitate, and the acid afterwards neutralized by dropping a few minims of *liquor ammonia* to the water before finally pouring it off. Plenty of "elbow grease" is

required to get a really well amalgamated mass, and it is somewhat hard work.

If too much mercury is used at first, and if the mass is not ground up sufficiently, one gets a softish amalgam. Practice in making it is required, and even when every care is taken occasionally an unsatisfactory product results. The amalgam should be rolled into small pellets and allowed to set and never used for the first twenty-four hours.

When they have set, one can easily ascertain with a sharp penknife whether the sample is hard or soft. If it cuts too readily with the knife all the pellets should be heated up until all the mercury is quite driven out of them, well ground up again, and rolled afresh into pellets after the excess of mercury has been squeezed out through wash leather. On examining the pellets after they have once more set, they will be found to be much harder.

Dr. Elliott found that bricks made of amalgam which had been heated up five or six times took more force to break than similar bricks made from amalgam that had been only heated up once.

From my own experience I quite think that it is better to overheat rather than under heat the pellets, if necessary adding additional mercury to render the mass sufficiently plastic.

I always save the scraps that are generally left over each day, and use them up again, thus getting quite as good if not a better and stronger filling than from freshly made material, such a filling certainly seems to wear on a masticating surface better, which bears out Dr. Elliott's statement. Occasionally with newly prepared amalgam, where, in making, the mercury has been added too rapidly, and where the mass has not been ground up sufficiently, one gets a quick-setting amalgam which is far too soft to be of permanent value. By carefully heating this again and thoroughly triturating, a good serviceable amalgam can be made of it.

Mr. Boyd Wallis, in an article in the *Dental Record*, for February, 1889, advocated boiling the precipitate with dilute sulphuric acid, then thoroughly washing and pressing between blotting paper and finally drying in hot air.

I have not found any advantage in employing this method with precipitate that has been deposited on iron, indeed it seems

an easier way to prepare the amalgam by the method just described. Where zinc bars are used instead of iron, it certainly seems advisable to use plenty of sulphuric acid to clear of the zinc which is evidently present in more than traces.

With regard to precipitation by *Electrolysis*, I have had no personal experience.

In preparing the solution of copper sulphate, care should be taken that it is not too strong, as in that case the copper is precipitated in small hard metallic particles, which do not so readily amalgamate as the finer, flocculent precipitate. With a little experience one can tell the right strength by the color of the solution.

With bars of zinc you get a dirty blackish precipitate, which amalgamates more readily than that thrown down by iron, forms a much softer filling, which keeps a better color itself, but which undoubtedly stains the tooth more.

In fact it may be generally admitted that where the filling goes black hardly any staining of the tooth itself takes place except in places where the tooth itself is unusually soft. Of course the color of the amalgam would show through frail enamel. Under copper amalgams, pulps do not so readily die as under amalgams which do not contain copper.

A tooth that has recently had an amalgam filling inserted is often exceedingly sensitive to extremes of temperature at first, but under copper this sensitiveness passes away much quicker than in cases where amalgams of a higher grade are used. The copper seems to have a hardening effect on the sensitive dentine, whether by penetrating the dentinal tubes or not, we cannot say. Caries hardly ever starts afresh under this amalgam, certainly not to the extent that it does under many others.

From certain experiments, Dr. St. George Elliott, in a paper read before the Odontological Society of London, clearly demonstrated that copper amalgams shrink in setting more than those containing tin and silver only. But in practice one finds that this is of little moment.

The edges of old fillings in crown cavities that have been doing service for some time often appear to stand up above the surrounding enamel. This apparent change is due to want of care in finishing the filling at the time it is inserted, and to leaving a thin layer of amalgam beyond the edges of the cavity.

These flakes of metal afterwards break off during mastication, and hence the filling appears to have risen.

The best way to obviate this, is whenever possible to carefully polish the filling at a subsequent sitting, taking especial care that the edges are flush with the enamel. To get the best results from copper amalgams as well as with all other amalgam fillings should at a second sitting be as carefully polished and finished off with as much care as one would finish a gold plug. I am quite aware that it is not always possible to persuade a patient of the necessity of coming back for this even where you take the pains to assure him that no extra fee is expected.

It is the careless manipulation of amalgams that often discredits their use, and drive patients to those dentists who have the reputation of filling teeth with gold alone.

If the pellets of amalgam such as we buy at the various depots are over-heated, on breaking up and triturating in a mortar, a reddish hue is often seen in the mercury. I cannot say whether this is due to the presence of iron or to the fact that in heating up, the copper has been, as it were, wasted.

If the amalgam is put into the tooth in this state, discoloration generally ensues. In one such case where a dead tooth was filled and all the excess of mercury left in, the tooth was almost black the next day, while the filling which was somewhat soft, retained its color. This tooth has been under observation for nearly four years, and the filling is slowly wearing away, though no fresh decay has arisen in the tooth.

As a root filling this amalgam can also be used, but it is better to limit its use to the roots of those teeth that have recently had their nerves extracted by the dentist himself, and not to employ it in cases where any suppuration has taken place previously.

The reason for this precaution is obvious. One of the secondary advantages of using this amalgam is its comparative low cost.

Dr. Elliott calculated that an ounce of this amalgam could be produced for 7d., if made at home, while the cost of Stewart's amalgam is 4s. 6d. per ounce. I mention "Stewart's" as it seems to be one of the best in the market, and is prepared with iron and not zinc as the older forms known as "Sullivan's" were.

To sum up, the disadvantages of copper amalgam are—

(a) Its softness, and consequently its inability to stand as well on masticating surfaces as many other fillings.

(b) Its tendency to discolor the tooth it is employed in.

While the advantages of using it which to my mind far outweigh the disadvantages, are—

(a) Its antiseptic qualities.

(b) Its undoubted ability to harden the dentine.

(c) That pulps do not die so readily under it as under amalgams that contain no copper in them.

(d) Its low comparative cost.

THE EFFECTS WHICH THE VARIOUS DEPOSITS HAVE ON THE SURROUNDING TISSUES.

BY PAUL WOOLSEY, ANN ARBOR, MICH.

THE deposits found on the teeth are tartar, green or black stain and temporary deposits such as food, foreign matter, etc.

Tartar is by far the most important, both on account of the large amount of this deposit found and of its effects on surrounding tissues. Tartar does not, as some suppose, have any effect on the teeth; indeed, in some cases it prevents decay. However, it greatly effects the gums and alveoli causing their absorption. This absorption usually takes place without causing much inconvenience to the patient, but sometimes a good deal of pain is experienced. The absorption sometimes goes on to such an extent that the alveolus drops off. The irritation set up by this absorption may extend to and involve the neighboring tissues. The mucous membrane may become affected and the periosteum involved to such an extent that suppuration may result.

Green or black stain is a deposit on the teeth which does not affect the surrounding tissues.

Temporary deposits of mucus, food and other foreign matter soon collect on the teeth if the cleanliness of these organs are neglected. These deposits if not removed render the breath foetid, and if they remain long enough will cause sloughing and softening of that part of the gums with which they come in contact.

After studying the deposits found on the teeth and their

effects on surrounding tissues it is certainly clear that these cases should receive as much, if not more attention from the dentist, than the ordinary decay or caries of the teeth, because the worst cases of absorption are harder to treat and produce more lasting effects, and, perhaps, disfigurements than ever accomplished by decay.

DENTISTRY AS IT WAS, IS, AND SHOULD BE.*

BY W. H. ATKINSON, M.D., D.D.S., NEW YORK.

DENTISTRY *was* practised by a few men who recognized the lack in general medical practice of any particular knowledge of the teeth, thus causing neglect of these organs until extraction became the common fate of an aching tooth.

The field thus opened to attention attracted some replete with genius and some with less.

Through these were gradually evolved methods of practice, effects and conditions were noted, and by patient experiment palliatives and cures were discovered.

In respect to the filling of teeth at that time, the efforts were confined mostly to plastics, more or less crude in character,—gums, putty, sulphur, etc. Some filling was done with metallic lead, forced one way or another into the cavity. Tin was also used, and much comfort was secured to patients through these materials; and later, by gold and also bits of porcelain ground to fit and set in balsams.

The substitution of teeth was effected by means of bone, and other plates carved to fit better or worse, and to these plates natural teeth were attached in various ways,—wood, bone, silver, and gold embracing the materials for bases.

Hand-carved porcelain teeth and plates were and are the best effort in this direction.

Immovable and movable bridges, where required, with or without porcelain, furnish admirable means of supply; and it is doubtful whether they will ever be laid aside.

Crowning inside of a collar for bad breaks, or porcelain filling, where demanded, represent the highest stage of the art of filling.

* Written for the North Dakota State Dental Society, 1889

Operative dentistry has reached an altitude of skill that it is hazardous to assert will be much excelled in originality.

The door is wide open for *surgical* improvement, and it is in *preventive* dentistry that the world may have the greatest cause to bless us as a profession.

So much attention has been directed to mechanical expedients, and such admirable means are now at our command, that it is little wonder that preventive dental surgery has held a secondary place in the esteem of most dentists.

A thorough knowledge of the development of the teeth in foetal life and in early childhood furnishes the ground-work for intelligent preventive and preservative measures; but to this must be added a medical training, competent to lead the general system to do its duty of nourishment to the teeth at all stages of their growth.

In reparative dentistry, socket and other bony restoration, after solution by pyorrhœa alveolaris and other caries, or by necrosis, implantation and sponge, or other grafting, supply means almost beyond computation, as to value in restoring the mouth and jaws, with their appendages, to healthy, useful, and beautiful condition.

Dentistry has come through a vale of ignorance, intolerance, and deceit. In no other profession has advanced thought met more opposition, but in no other has necessity drawn out such general and superior genius. A dentist is and should be *all* a man, and it is because of these qualities, in many of the earlier workers, who, being banned by "professionals," were driven to experiment and continued investigative effort, that we as a profession have grown through trials—many and severe—to a condition of proud prominence.

To-day a dentist may be safely placed in any position where skill, forethought, promptness, kindness, firmness, and general intelligence are required, and defy mankind to produce his superior from any other department.

A perusal of the literature of dentistry, past and present, gives comfort to an earnest investigator. The increasing appreciation of the value of clinics marks general growth, and the necessary attendant upon growth is the desire to know more and see and understand more of new methods and practices.

It is natural that a successful operation, if new to the opera-

tor, inspires him to promulgate his discovery; and let him not despair if many claim to have done the same, or a better, long before he did.

Coexistent discoveries are not at all uncommon, and if a false application or explanation of a part of proceeding is proved, it does not follow that the whole is condemned, nor that even loaded with discrepancy it fails in producing a directly beneficial result to the patient and the operator.

Many are apt to condemn on slight evidence; and were these same decriers held to account for their own failures, even in what might be called regulation operations, the excuses of these objectors would be many and varied, and their vision and judgment considerably obscured. Yet one hears implantation, bridge-work, the treatment of pyorrhœa alveolaris, and sponge grafting condemned most vigorously, thus assailing the acme of our advances in redemptive effort.

Recently an article appeared in which the endeavor was made to give implantation and bridge-work a very black eye. Unquestionably the author of that paper wrote in good faith, and it would be wisdom for him to decline to implant a "corpse" or place a festering nuisance of a bridge in a patient's mouth, for it seems quite clear that the expected results would probably follow such attempts.

Which is the more manly, sensible, professional, and practical, to follow in the steps of known investigators and, if necessary, to experiment with each one's method, if difficulty be met in discriminating among them, or to decry systems because some failures come under observation?

That bridge-work does fail is evident to nearly every dentist, but that it fills a place, in its own sphere, second to no other system of restoration, is also patent to any one who has a knowledge of its several constructions.

Implantation has proved successful for a series of years, and the advantages of its employment measure quite proportionately with the average success of large gold operations.

For the restoration of a complete arch in a case in which two to five teeth forward of the first molars, where for sufficient reasons a bridge is incompatible, implantation is eminently useful and permits us a beautiful, useful, and safe result, whether the attachment be vital or mechanical.

The surgical and medical treatment of pyorrhœa alveolaris, and irregularities of the teeth and jaws, have been thoroughly tried and not found wanting, with nearly uniform success.

Much has been written in all these departments, and improvements may undoubtedly come out from time to time, but success is *now* assured to such extent that the intelligent operator need not hesitate to undertake any one of these efforts or all of them.

The journals which devote their pages to dentistry constitute a continually revised text-book, well repaying the investment in all of them; and a remark made long ago—"I want them *all*"—is true, and points to a means of improvement second to none for the average practitioner.

The growing tendency for post-graduate schools indicates the awakening appreciation of the inadequacy of the usual college course, although the curriculum of any of them, if thoroughly followed, would be a strong bar to these post-graduate efforts.

The business character of our schools is too prominent, and makes the effort to increase their actual efficiency subservient to the question of profit and large classes.

College education is a grand thing, but it can never wipe out private pupilage on the basis of good to the student until the courses are extended over a sufficient period of time to give the student large clinical experience in a well-managed and largely-attended infirmary.

The demand of the day in the line of educating dental students is colleges with endowed chairs, located in several accessible centres of the country, furnished with the best appliances, for every branch of dentistry.

Provision should be made for hospital wards for serious cases, and there should also be ample infirmary accommodations. These may properly be State institutions.

In some sections several States might unite in the support of one college, locating it in the most central point.

We need better teaching, more clinical experience, and longer pupilage for our student. Too much anxiety is shown by many to secure a degree that they may gather money somehow. Professions are loaded with incompetents to such extent that bad service makes almost more work than neglect of all.

The endowment of such institutions as have been named

would properly include scholarships, secured by competitive examination, not only in regard to mental capacity but also with respect to general manual and administrative dexterity.

It is not intended to advocate free instruction outside of the scholarships, but to permit good professors to be in charge of all college chairs and untrammelled by the claims of private practice, thus removing the great obstacle to earnest, continuous work in advancing the quality of dental education.

Our past has been dark and full of trials and mistakes. Our present is replete with methods, appliances, and apparatus.

Our future should bring to the service of our patients the ability so to care for the teeth of children, and also their general health, that when they reach adult life, their teeth, their bodies, and their knowledge of the principles of correct life shall furnish them—as far as human effort can—with the capacity, knowledge, and will to continue the good work of intelligent propagation of children, continually advancing to a perfect endowment of health of body and mind.

The dentist of the future should be man, priest, physician, and friend all in one. Our bodies should be clean, our hearts pure, our brains clear, and our health sound. The ideal dentist will be the ideal man.

A BRIEF ACCOUNT OF DENTAL LEGISLATION IN FRANCE.

IT may not, perhaps, be without interest to our readers, if we give them a short historical retrospect of the various laws, which have regulated the practice of dentistry in France during years gone by, and also a brief statement of the position of affairs at the present time; with a resume of the various proposals now before the French public, with a view to future legislation. We have at home so recently passed through a similar crisis,—a transition from a time of absolutely no control whatever, to one in which a long and expensive period of varied and scientific study necessarily closes the portals of our profession to the unqualified and often incompetent free lance, we say, this is so fresh in our memories, that the present struggles of our Gallic friends must be peculiarly interesting to us all.

So long ago as the year 1614, we find dentists mentioned upon the French statute-book, but there was no very formal reference to them till an Edict of 1768 laid down certain rules as to the period of study which would, after that date, be required to be spent, and as to the examinations which would have to be passed, before any one would be allowed to practice dentistry. Article 126 of this law, linking dentists with the manufacturers of trusses, enacted that both should possess a certificate of fitness from the College of Surgery, whilst the succeeding articles gave the conditions under which this certificate was to be granted.

First, a pupilage with a qualified practitioner, for two consecutive years in Paris, or for three in the provinces, was required of the candidate, registration being strictly enforced. At the conclusion of this pupilage there was to be an examination of two days' duration before various medical officials. On the first day, the questions were to be on the theory of dental surgery; the second day being devoted to a practical examination. If the candidate acquitted himself to the satisfaction of his examiners, and had presented a certificate of baptism, of religion and so forth, he was duly admitted; of course not omitting to pay the omnipresent fees. Then there followed a special clause, forbidding these dental licentiates, to practice any branch of surgery, under a penalty of three hundred francs, or to assume the title of surgeon under a penalty of one hundred. This almost seems a distinction without a difference, at any rate it is difficult to see so great a difference in the magnitude of the offences, as to justify the relative proportion of the fines, being in the ratio of three to one.

In the year 1789, however, the Revolution broke out, and all laws regulating the practice of dentistry, shared the fate of a great many other things (including not a few people) existing at that period, *i. e.*, they came to an abrupt termination. In May, 1791 (the year the King and Queen were arrested), a decree was issued abolishing all corporations; this, of course, put a very effectual end to the attempt to exercise a judicious control over dental study and practice. The people were "emancipated," they were to be henceforth supreme, and not unnaturally demanded a period of absolute liberty. Then, tyranny of the King, or rather of "*la haute noblesse*," was for a time followed, as all the world knows, by tyranny of the people. Every one

was free, and therefore, any one who would, could practice what he would to the advantage or otherwise, of any one else.

As years rolled on, and things again became more settled, the abuses which had grown up in dental practice during this period of absolute liberty, called for some restraining influence at the hands of the law. It seems to have been the opinion of many, who doubtless held surgical qualifications, that this could be best exercised by looking upon dentistry as a special branch of medicine, and so seeking to bring it under the medical Acts, which then existed. In 1826, five years after the death of Bonaparte, the Bourbons being now upon the throne, a celebrated test case was before the courts. Marie Delpenel, a dentist's widow, who seems to have continued to carry on her husband's business, was prosecuted for illegally practicing the healing art. The case was taken through several courts, the prosecution arguing she was really practicing a branch of medicine, the defence that dentistry was no such thing. Ultimately, the case was brought before the Procureur de Roi, and was by him dismissed. He delivered a long judgment, the gist of which was, that dentistry was neither a branch of medicine nor of surgery,—that it did not, therefore, come under the medical Acts, and so Madame Delpenel, who confined herself exclusively to the dental practice, was not guilty.

Nineteen years later, in 1845, another test case was brought before the courts. Several men were prosecuted, the arguments turning on the same points as in Madame Delpenel's case, *i. e.*, whether or no dentists came within the law Ventose, the medical Act above alluded to. As is usual the courts differed. The lower ones held that dentists did come within the Act, they held that whenever in the said law doctors or surgeons or officers of health were stated, these were not to be regarded as mere abstract expressions, but by implication it included all who practiced the whole or any one portion of the healing art. That a dentist was a doctor-dentist, a surgeon-dentist, in the same way that an oculist was a doctor-oculist, or a surgeon-oculist.

William Rogers, one of the defendants in this trial, carried the case from court to court, until at last the court of Cassation, the supreme court, acquitted Rogers, reversing the decisions of the lower courts.

This case seems to have been regarded as establishing a pre-

cedent, for though other specialism have since been held to come within the law *Vertose*, dental surgery has since never been so looked upon in the eyes of the law.

In 1847, M. De. Salvandy presented a bill to "*La Chambre des Deputes*," which proposed to bring dentistry within the provisions of this Act, but in the following year the second Revolution broke out, Louis Philippe fled to England, consequently the bill came to naught.

But the question was not allowed to lapse, though during the second empire no advance was made. Ten years since, however, the founding of the two rival dental societies, "*La Chambre Syndicate de l'art Dentaire*," and of "*La Cerele des Dentists*," again brought the subject prominently to the front. Both these societies are equally in earnest to ensure the progress, and promote the interest of dentistry, but the views they hold as to the best means of doing so, are widely different. The former thought that a state regulation was the essential point, where the latter considered that the establishment of a dental school, was the important step. The former demand the prohibition from dental practice of all who do not possess a special diploma, or are graduates of medicine; the latter would leave the present absolute liberty of practice untouched, but would seek to remove the stigma of inferiority from French dentists by simply giving facilities for studying and by maintaing a higher standard of teaching in the schools.

The government being appealed to granted a commission to go into the whole subject, with a view to dealing with the question in the next act.

Without entering into all the details of the proceedings of this commission, or entering into full details of the three schemes, viz., that of M. Lockroy, of M. Chevandier, and of M. David, while they are still sub-judice, we may yet take the liberty of reproducing a translation of the succinct account which was given in tabular form in the "*Revue Odontologique*."

COMPARISON OF DIVERSE LEGAL PROPOSALS.

M. LOCKROY.

That the practice of dentistry shall be prohibited to every one not possessing the diploma of Doctor of Medicine, or of Health Officer, under the clauses 1 or 2 of the present law.

But that, dentists over 20 years of age, who can prove that they have been in practice for two years, prior to the passing of this Act, shall have permission accorded them to continue so to practice.

This permission does not give these latter the right to administer anæsthetics.

M. CHEVANDIER.

That no person may practice dentistry, nor take the title of Doctor of Medicine, nor of Surgeon, nor of Dentist, unless he possesses the right under articles 1 and 2 of the present law, or by virtue of a special diploma.

That this regulation shall cease to apply when after a course of dental study shall have been established and been in existence for two years in all the faculties of medicine of the state schools.

Schools of Pharmacy and Medicine; from the day when each of these schools shall have an examining board authorized to grant the diploma of Dental Surgeon.

French and foreign dentists actually practicing their art shall be compelled within three months of the passing of this law, to sign a declaration that they are then practicing dentistry.

M. DAVID.

That the practice of the dental profession in France or its colonies be prohibited to all who do not possess the diploma of Doctor of Medicine, granted under the stipulated condition of Act 1, of the present law, or who have not the diploma of Dentist granted by the French government, after examination before a Faculty, or a State Medical School, and after a course of study prescribed by the chief council of public instruction. That the right of practicing dentistry shall be granted to any Frenchman of more than 30 years of age, on the production of his patent of having practiced two full years in France, or its colonies, previous to the passing of the present law. A certificate instead of a diploma will be granted to them by the Faculties or Schools of Medicine. But in no case will a dentist have the right of administering anæsthetics without the assistance of a Doctor of Medicine, nor shall he have the right to prescribe medicines except in those cases stipulated by decrees granted on the advice of the Academy of Medicine.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

PROSTHETIC DENTISTRY OF TO-DAY.*

BY GEO. H. WILSON, D.D.S., PAINESVILLE, O.

THERE is no department that has caused so much discussion as to its relation to, and position in the profession. It was first known by the name mechanical dentistry, because the work was almost entirely done in the laboratory, and the great object in view was to produce a mechanical substitute, giving very little attention to the artistic side of the work.

The thought seems to have been that all that was necessary was to have an impression, an articulation, and a set of teeth, and the mechanic was supplied with all of the requirements. To-day, too many have no higher ideal, they are mechanics and belong to the trade mechanical dentistry.

Then came the name prosthetic dentistry—from prosthesis, to put to, to add. In surgery, the addition of an artificial part to supply a defect of the body.

This is the title given us for our paper, and if literally construed would mean all restorations to the mouth in whatever form; but we prefer the usually accepted idea, that is, that part of the work performed in the laboratory.

This name is better than the first because it implies more than mechanics; if it supplies, or restores a defective part in the best manner possible, it must be harmonious as well as mechanically perfect.

Æsthetic is another term that has of late been applied by a few to this branch of our profession. I consider it the least appropriate of any. It means to perceive or apprehend by the senses. The science or knowledge of the beautiful in nature and art. More applicable to the art critic, or his work, than to the artist.

* Read before the Northern Ohio Dental Society, at Canton, May, 1890.

Artistic is another descriptive adjective applied of late, and is probably the best to express our *highest* ideal. The word implies not only execution, but cultivation, a refined taste. It should not be confounded with artisan, which implies skillfulness in some handicraft, but has nothing to do with refinement or cultivation. A portrait painter, sculptor, musician or architect, may be an artist; but a sign painter, machinist, organ-grinder or carpenter, can only aspire to be an artisan.

Artificer pertains to artisan and not to artist.

Dentistry—dentican—or dentificier.

Dr. W. W. Allport, in an address before the American Academy of Dental Science, upon Prosthetic Dentistry, advocates the separation of our department from the profession; and, like Abraham of old, did with Hagar and Ishmael, would turn them loose upon the world with a little good advice for sustenance.

Dentican—dentificier. We understand that the Doctor coined the words and undoubtedly they were suggested by dens and artificer and literally rendered would mean tooth carpenter. I do not object to the name, but I do object to the whole scheme, as I believe every active, progressive man in the profession should. I can only explain the Doctor's motive in making public such thoughts by assuming that he realizes that a chain is no stronger than its weakest link, and that there are but two ways of remedying the trouble—1st, to strengthen the defective part; and 2nd, to cut it out.

As a result of the many years of hard labor the Doctor has given to bringing the profession up to its present high plane, he has become weary and faint hearted, and in a despondent moment he says that he will take the surgeon's scalpel and amputate the diseased member. As a result of the long-continued inflammation and the malpractice of doctors(?), there is no farther use of conservative practice, but we must be heroic and take the chances. Or, the Doctor in his efforts to elevate the dignity of the profession has so far advanced that the common mind cannot comprehend him.

If the grand men of the past fifty years have been able to bring our profession up from a trade to the honorable position it now occupies, with this degrading artisan department attached, would it not be better to say that we have done well, we have placed operative dentistry (dentology) out of the mire upon the

solid rock of honorable recognition? That will stand, it can never go back.

Now, we will give our attention to the remaining artisan department and we will place it upon the same solid foundation.

If the glory crowned veterans of the past achievements feel too much the depression of years and toil to undertake the task, let them give the battle cry to the younger men, for there is a larger and better equipped army reserved in the rear, only waiting for the orders from headquarters: "To the front," where they will prove their mettle.

Or, shall we say, "It is in the mire, we will push it farther and let it lie with McGinty."

You say to me, look at the men composing the ranks of that department. Why, there is a shop whose proprietor makes his boast, that he has a boy whom he took from among the street arabs, and in a short time had him so he could grind up a set of section teeth in fifteen minutes. I answer, the same proprietor also boasts of putting in sixteen gold fillings in two hours, and receiving two dollars per filling, and from a personal friend at that.

You say, here is another steam shop, where, in fifteen minutes from taking the denture from the vulcanizer, they have it ready for the mouth; file, scrape, sand-paper and polish; how much refinement and cultivated taste in that? I reply, how much honor, refinement and cultivation in the profession of the gambler on a Mississippi river steamboat to prepare one to do a \$5,000 a year business, giving vitalized air and extracting teeth? Operative dentistry—dentology.

What are we to take as our goal? What to hold up before the world as a representative—knowledge, truth, perfection, the well developed men of our profession? or quackery and the monstrosities? Are we artists or cynics?

The Doctor also claims that the tendency of this department has been continually downward. We assert, that the truth is just the reverse, although it has not kept pace with the operative department.

The profession has but passed its formative period, and, as was natural, the first operations were simple ones and crudely performed. But, as confidence was acquired, greater strides were taken, and, now and then, some brave spirit appeared like a

meteor and dazzled his fellows with the splendor of his achievements. As time passed some proved to be genuine advances and others flimsy bubbles; but from the ruins some truth was learned and often some principles established.

The eternal principle underlying the profession is the salvation of the natural organs. When we begin to add to, we enter the domain of prosthesis, and who shall say where it shall stop?

We have a case presenting, a carious incisor. We are not restricted, but permitted to express through our operation our highest ideal, if our manipulative ability will permit, of perfection.

A step farther. The same tooth, the crown is gone. We are permitted to go to the depots and select a ready made one and set it. Suppose the operator decides that the made crown is not the best for the case (and rarely are they), but that one should be made. Shall he refuse to do the work because it is dirty and unprofessional?

A step farther. The root has been extracted and the patient must have it replaced. You either do not believe in implantation or do not think it a suitable case. You say, "Madame, the profession has done all it can for you; you will be obliged to go to Mr. Blank around the corner and have him make you a false tooth." Your lady looks at you and you see her confidence in your ability vanish, as the expression of mortification develops. She implores you not to abandon her to such a fate. She informs you that she will never be able to smile again, for she can never endure to have that false tooth show. "He will be sure to have it off color, misshaped, or something so every one will know it. And then, that horrid plate over the roof of my mouth. Oh, I could never endure that great gold tooth, or that unsightly band." You assure her that her fears are without foundation, that Mr. Blank is a very fine workman, and that he has fine taste and will do the work so that the sharpest eye cannot detect it.

What would be your mortification if your fine lady should say, "I thought Mr. Blank was only an artisan. If he can take my case when you have done your utmost and carry it to a complete success, is he not more of an artist than you?"

We made the assertion that the tendency of prosthetic dentistry had been continually upward.

We need not go back farther than the establishment of the first dental college. In what condition was this department at

that time? So limited in resources that only the wealthy could afford a substitute in case of a lost denture. The base was well enough, gold and silver, but the method of attaching the teeth! The teeth themselves! no exact knowledge of size, shading, contouring, temperament, age, etc.; the utter inability to arrange for proper occlusion and expression at the same time! The modes were so crude that when the section teeth were introduced they were greeted as a great advance, although, to-day, the abomination of every artistic eye.

It is true that the most artistic method (continuous-gum) had its birth at about the same time as the least artistic (vulcanite.)

When we consider the small portion of the profession who were imbued with professional and artistic ideas, and the ease of construction and the cheapness of the one material compared with the other, we do not wonder at the condition of affairs.

To-day we see the tide is turning, the dentist recognizes the truth, although he may not be in a position to show his faith by his works. The mass of the profession are only waiting for the leaders, when they will follow. While vulcanite is the least artistic, yet, because of the ease of manipulation and of its inexpensiveness, it is of great value in many operations; also to those who would be denied the benefits of the more desirable, because of their financial inability to procure them.

The number who are ignoring the prosthetic department, the many good men who give so much attention to the different methods of bridge-work, none of which are simple compared with vulcanite, the recent introduction of the practitioners course in prosthesis, all demonstrate the demands of the times and the upward tendency of the department. If these courses are attended to any great extent by the recent graduate, it suggests that his *alma mater* has not done all it should for him and the necessity of longer time spent in the schools.

If the tendency to create a specialty within a specialty and to confine ones self to one department, is because the whole is too broad and extensive, why should such men clamor for admission to another profession with its multitudinous subjects and its current literature so extensive that if added to our own, would engulf the busy practioner.

This leads us to prepare the way for a discussion upon the relative position of prosthesis, how and what taught, and by whom practiced.

We assert, without any qualifying remarks, that the salvation of the natural teeth is the first and the foundation principle of dentistry (dentology)—and he, only, is capable of assuming the responsibilities of prosthesis who thoroughly appreciates this principle and is putting it into practice every day. The one who has his mind upon artistic prosthesis and makes a study of the temperaments (which will have to do with size, color, shape, contour, etc.,) age, nationality and idiosyncrasy, can verify his reading and theorizing at the chair and nature will be his type, while, deprived of this educator and financial interest, the artificial becomes his ideal and he loses sight of the natural. Then can we say with Dr. Allport, "a libeler of the soul, a defamer of the human face divine."

While the mechanical processes are and should be taught first, the art, science and philosophy of prosthesis should be last, after a thorough foundation has been laid in the collateral branches and in the theory and practice of the operative department.

Our reason for this arrangement is :

1st, Mechanical processes, so that the student may acquire dexterity and become a good artisan :

2d, Theory and practice of operative dentistry, so that the student may comprehend the first great principle of dentistry, know the capabilities of this department and be thoroughly imbued with correct professional ideas :

3rd, The theory and science of prosthesis, not only because it is the last resort, but because the student is in a position to have some cultivation and refinement of taste that may stamp him an artist.

Hence, in practice, we would say that the extraction of teeth should be wholly in the hands of operative dentists ; also that the artistic part of prosthesis, the impressions, selections of the teeth, expression and contouring should be attended to by the operative dentist. The remainder of the work can as well be done by the artisan—better if the dentist is not as good an artificer.

In this way, it is not necessary that the artisan should know the patient, nor should the mechanic be permitted to alter the expression or contour in the least.

We would suggest that a college education should not be required of the artisan. He should not be known as a dentist or

have patients. For patronage he should depend upon the dentists and the only certificate of commendation required of him would be the same as any worker in the fine metals and ceramics—ability to satisfy his employer. The extraction of a tooth or the taking an impression should be as foreign to such a man as to a jeweler. I believe it is and would be pernicious in the extreme to permit any man to eschew the operative department and be legalized in extracting, taking impressions and making false teeth. We might have the artisan to help out the busy practitioner in the laboratory, or in a private laboratory of his own, where those who wished could send their mechanical work. It is the duty of the operators and he owes it to his patients, to attend to the artistic part of prosthesis, and if he does not do so he violates Section 1, Article 1, of the Code of Ethics.

A few thoughts in regard to the various methods at our command and I have finished.

We will not consider the various crowning methods, but will consider that in order to be relegated to our department there must be the entire loss of one or more teeth from the dental arch. Then will come the question, how shall that be restored, by a bridge, suction, or clasp plate? If the operator decides upon the bridge, then he must consider the method. For convenience, he may consider there are but two varieties, namely, the E. Parmley-Brown all porcelain and the gold soldered. It is possible that some cases might present themselves which could be made stronger by the soldered method, but usually this would not have to be taken into consideration. From the artistic and health standpoint everything is in favor of porcelain.

That it will ever supercede the gold method I cannot predict. We know how the beautiful, continuous gum has been neglected for simpler and baser methods. Porcelain has always been considered one of the fine art materials and susceptible of the finest manipulation. Art, in this as in all other work, implies knowledge, skill and taste. It not only requires experience in working and firing the porcelain, but mechanical laws must be observed, strain, leverage, cleavage, etc., must be considered. As most of the bridges are set in gold fillings, it demands that the operator be successful in that direction, or the work will be a failure.

Can we imagine a more ideally perfect piece of work than a bridge of one, two, three or even more, of porcelain teeth, perfect

in contour, their base pressed firmly against the gum and supported at either end by well constructed gold fillings? No gold caps, or bands, in sight, no gold tips, no opacity from metal backings, or self cleansing places on the palatine surface, to interfere with articulation. A material, after it is constructed, capable of being stained, colored and etched to represent the effects of time and use upon the natural teeth. It is the material with which the artist of the future will produce wonderful results.

Celluloid is a material that is not receiving the attention it deserves. It is capable of doing, and has done, more toward developing our present ideas of artistic dentistry than all other methods, except porcelain.

Aluminum is a material that will probably be much more used in the future than in the past, it having the desirable qualities of lightness, strength, purity and cheapness.

Continuous-gum will continually be more and more sought after as the dentists become better educated in this department.

I believe the demands of the times are such that, with the increased time to be so soon required by the colleges, much more attention will be given to the art and science of prosthesis and that the better kinds of dentures will be in greater demand.

I desire to call attention to the method devised by my friend and classmate, Dr. Miller, of this city. It consists of making a continuous gum section, not exceeding eight teeth, and attaching to a vulcanite, or metal plate, with the posterior teeth attached in the usual way. It has the advantage of being less expensive than the full, continuous gum, therefore an entering wedge and a help to educate the dentist and the patient to the best. It is much lighter, and yet gives the same opportunity of expression—valuable in partial cases.

We rejoice in artistic prosthesis and desire to use our voice and hands in maintaining and uplifting it, so long as life shall last.

Mechanical dentistry we are willing to relinquish to any good artisan who may desire to pursue it.

A METHOD OF MAKING AN ALL GOLD CROWN,
DESCRIBING A CONVENIENT WAY OF
OBTAINING AND USING A
MODEL.*

BY THOS. G. READ, L.D.S., ENG., D.M.D., HARV.

A SUITABLE model is most useful when crowning bicusps and molars and in some cases incisors and canines.

The method to be described is in my opinion less painful than those ordinarily practised; a great part of the work is done in the absence of the patient; the metal band of the crown is roughly adapted to the stump and feather-edged previous to fitting in the mouth; the portion passing under the gum is the same relative distance beneath it around the stump and a very perfect occluding surface is obtained. When about to crown a stump, first if possible adjust the rubber-dam and fill the pulp canals, then reduce the broken down crown in height to allow for restoration of the occluding surface, the stump being left standing as high as possible above the gum. Should much tooth tissue have to be cut away and especially where the adjacent teeth are close, a long file cut fissure bur with a chisel point is very useful; two holes are drilled with the point from the labial to the lingual surface, one at the mesial, the other at the distal part of the crown; the tooth substance between these holes is cut away with the fissure part of the drill, then one blade of a pair of excising forceps is placed in the labial and the other in the lingual opening, the handles are pressed together and the crown comes away.

Small pieces of upstanding tooth substance close against another tooth may be readily removed with a wheel bar, such as Dr. Horatio G. Meriam's, these projections can be cut off from the inside without wounding the gum and the unpleasantness of running a corundum wheel in the mouth is avoided.

Now make the sides of the stump as far as the band is to extend quite parallel, so that the crown may fit the stump closely and tightly like the lid of a tin canister. Previous to paring the stump cocaine in the crystals is rubbed on the gums with the

* A paper read before the Odontological Society of Great Britain, May, 1890.

finger, then by a drawing to and scraping motion with Dr. Daniel F. Whitten's broken back, and Dr. Bennett's Nos. 5 and 6 chisels, the enamel and overhanging or projecting tissue of the stump is stripped off.

The sides of the stump having been pared quite parallel should be finished smooth by carefully passing a safety point shouldered, fine file cut fissure bur around it.

Take a strip of thin metal, telephone plate answers well, trim and bend this to the stump, when roughly fitted press a small piece of softened composition to the band and stump, the patient then closes the mouth biting into the composition, as soon as it is hard remove the impression and little band from the mouth.

Cast a lower and upper model from this with the little band in situ, now you have the occluding and adjacent teeth and the stump with the little band on showing the position of the gum edge around it.

Over this band make the metal band of the crown in coin gold (size 5) to fit it and correspond to the gum edge, the join should be at the lingual surface.

Having fitted the band to the model, soften the end of a stick of composition and press the band on with the edge to go under the gum uppermost, this is feather-edged with a fine round file.

Take a piece of coin gold of the same substance as the band and in Messrs. S. S. White's die plate strike up cusps for the crown.

Try the struck up cusps to the occluding model and see if the bite will ride. Mark where it will, place the cusps on the male die of soft metal used to strike them up and with blunt pinchers knock down those places marked; the articulating surface is thus made perfect.

File up some solder and mix it with a little Parr's flux, file the interior of the cusps rather full and flow the solder over a Bunsen flame. Now see the patient and finish fitting the band on the stump, when this is accomplished solder it edge to edge, over a Bunsen flame, using binding wire as a clamp.

Then with contouring pliers contour the band. If the canals have not been filled twist a piece of binding wire with a bead or two upon it round the contoured band, place this on the stump and use it to hold the rubber-dam. Soften the end of a stick of

composition and press the band upon it with the occluding edge uppermost, with a fine flat file cut the surface flat, remove the band from the composition and try it and the cusps in the mouth, removing and replacing it upon the stick to cut away until the cusps are let in and the occlusion is perfect.

Now place the cusps upon a soldering gridiron, borax the edge of the band and adjust it in position on the cusps, so that when the shoulder that is on the cusps is cut away the buccal and anterior surfaces will be perfect; hold the work over a Bunsen flame and the solder in the cusps will melt and unite with the band.

When soldered if the lingual and posterior surfaces are not perfect build them up with coin gold scraps and solder filings, run the solder with a blow-pipe.

Boil in acid, trim with a fine corundum wheel and polish having the crown on a stick of composition. Horizontally groove the pulp-chamber, dry it out and fill it and the interior of the crown with oxyphosphate of a creamy consistency, press the crown on the stump with a notched tooth-brush handle.

Strike the tooth-brush handle once or twice with a lead mallet to expel any surplus of cement. When the setting is hard trim away any excess of cement with a broken back chisel. The mallet is only used in the final stage as the band can always if properly made be pressed on the stump with the finger.

SWAGING METAL PLATES.

THAT a well constructed metal plate will subserve a better purpose than any of the plastic bases now in use for that purpose no one will doubt, but the question arises, how are we to overcome the various difficulties attending the construction of metal plates? the chief of which is a perfect adaptation. Those who have had any experience in this class of work know something of the difficulties in sand moulding. Owing to the difference in the thickness and stiffness we can get a closer adaptation with platinum than gold; but as we cannot restrict ourselves to any fixed rule or any particular metal, I will describe my method of constructing metal plates up to the stage of attaching the teeth (which will apply with equal force to gold or platinum), leaving the operator to select his own method of attachment.

Formula for impression :

Material, Chalk, iii oz.

Marble Dust, i oz.

Finely Ground Asbestos, i oz.

Oil Pep., gtt xxx.

Add Plaster, viii oz.

Sig. Use just as plaster.

After taking three or four impressions so as to allow for any accident, place them in the sun or over a slow fire, and after thoroughly dry, build up a rim of moulding sand around each, into which carefully pour the zinc, just as the bulk is all melted, or just as it begins to congeal around the edge, adding drop after drop to each one, as they sink down in the center until each is full.

The counter dies are made in the ordinary way except one zinc counter for the final swaging, which is made by pouring the molten zinc at the lowest possible degree into a die, previously chilled in cold water and wiped perfectly dry.

The metal plate is then drawn as well down on to the die as can be with the hammer (keeping it well annealed). Then one or two thicknesses of muslin are to be pasted over about one-half of the palatine surface of the die and the plate then swaged with the lead counter. It is then annealed, and the final swaging finished with the zinc die and counter.

The object of the muslin pasted on the die is to prevent the plate being adapted to that part of the die until the final swaging which stretches the plate in the center and draws the rim close around the alveolar ridge.

I think anyone who may carefully try the plan will be benefited by the experiment.—DR. W. N. MURPHY, *Tex. Dent. Jour.*

SOME PRACTICAL POINTS FOR THE LABORATORY.

OCCASIONALLY, in soldering, a portion of our investment breaks off, exposing a part of a tooth. We can ill afford the time to patch the break and wait for the plaster to harden again. The exposed portion of the porcelain may be perfectly protected by covering it with a thick paste of chalk and water. This mixture may also be used to fasten small pieces of gold to the solder-block while soldering.

You all have seen artificial dentures where, after brief wearing, the front blocks separate, the plate finally breaking in half. To avoid this, permanently unite the blocks by soldering a platinum bar to the pins. To do this, after the teeth are ground to proper position, make a guide with plaster along the outer surfaces and then take off the front blocks. They are set into position in this guide, waxed together and invested, when the soldering may be done, the blocks dropping back into proper place.

There is nothing better than the pins from old teeth, soldered to a gold plate, for securing rubber attachments. The graving of a plate or even punching holes is a delusion and a snare. The rubber will separate from the plate some day. The prettiest and strongest plate is made with what we know as "celluloid" teeth, soldered to a gold plate and then rubber vulcanized around them. The plate teeth are not made in as good moulds.

Don't varnish plaster impressions. Soap the surfaces with a shaving brush. Be careful to wash off the suds, or the model will be pitted. Put a little red paint in the water when pouring your model, and in separating, the model is easily detected, by its color, from the impression.

Occasionally a gold plate is brought to us with a tooth broken off, the pins of course remaining in the backing. It may be that a good match cannot be found, or you may be in a hurry, so that you wish the same tooth could be used. Proceed as follows: Boil the tooth in acid to get the stump of the pins remaining as clean as possible. Invest it as for a backing. Lay a bit of pure gold over each broken pin and point a fine flame with the blow-pipe till a tiny gold ball is made on each broken pin. These may be filled up and may be sufficiently long to allow backing the teeth, using platinum foil and gold of a lower carat.

—DR. OTTOLENGUI, *Inter. Jour.*

PORCELAIN FILLING.

DR. STODDARD'S method is thus described in the *Archives of Dentistry*: As briefly as possible, I will give the method which we employ. There is nothing particularly novel about it to one used to porcelain work, but it seems to me that it is the most practicable in all cases of any that I have yet seen. Shape the cavity to general form desired, without making any undercuts.

Leave the more careful trimming until the time for fitting the filling into place. Take an impression of the cavity with Ash's modelling compound, using it in a stick the form of a pencil. Warm one end over a small flame, and thrust it into the cavity, taking care to get an accurate impression of the parts of the tooth immediately surrounding the cavity, as well as the cavity itself.

The color is now selected from the sample colors. Each sample corresponding in number to a body of that number. In this manner there is a certainty that the body, when baked, will be of the color desired.

Cast the impression without oiling it, and use the plaster paris very thin. In this manner an accurate model of the tooth and cavity may be obtained.

After separating, trim the margin of the cavity, in the plaster model, till it is slightly larger than the cavity in the natural tooth, to allow for shrinkage in baking, and make a slight undercut. Then mix the body of the desired number to the consistency of cream, pack into the cavity in the plaster model until full, and cover with a thin coating of enamel.

Place in the gas furnace; bake about two minutes. This biscuits the filling so that it may be removed from the plaster, otherwise, the model would melt when subjected to the intense heat in the furnace. Continue the baking for about six minutes longer, and the filling is fused.

When cool it may be ground into place, set and polished in a surprisingly short time.

The manner of setting being virtually the same in all methods.

Correspondence.

"I charge you that this epistle be read."

NON-METALLIC PLASTIC FILLINGS.

EDITOR OHIO JOURNAL: *Dear Sir*,—I have just finished reading Dr. Arnold's contribution on "Non-Metallic Plastic Materials for Filling Teeth," and am so impressed with the article, I must give expression to a hearty endorsement. Every word is true and every dentist should read it and put it into practice. There is

too much misrepresentation in the profession. We should be scrupulously honest and never fail to make our patients thoroughly familiar with the results to be expected from an operation, and impart all the knowledge we can that will be beneficial to them in caring for their teeth. We often meet people who hesitate to have anything done to their teeth because of having once been deceived. This should not be, for those of us who try to be honest and proficient are made victims, as well as those imposed on. While an operation is a matter of dollars and cents to us it is a matter to our patients of our very best services, and we should render to them everything they pay for—advice and all.

GAINESVILLE, FLA.

B. B. SMITH.

Editors' Specials.

"Write the Vision and make it plain."

CHEERFULNESS, AND THEREFORE USEFULNESS.

It is not profitable nor happyfying to brood over cares and sorrows. They hatch fast enough, even under the most adverse circumstances. A man, like the present writer, may be the owner of a whole fleet, but if it consists entirely of *hard-ships*, he will find its possession unprofitable as well as uncomfortable. Esop tells of a race of rabbits stricken with a universal discontent. They concluded that the whole creation was against them. They met in convention and decided to emigrate. They would go where there was nothing to hurt nor destroy; where they would enjoy the privileges of "life, liberty, and the pursuit of happiness." They gathered their gripsacks and started. During the first day they came in sight of a deep, broad river. The caravan rested on the hill-top, while chosen leaders went forward to find means of crossing. As they approached the river bank, the frogs were frightened by their approach, and plunged into the water. With one accord they hopped back to their comrades, and reported that they need go no further; they were not the underlings they had supposed. They had found people afraid of them, and they would stay right on the spot and drive these frogs into the river whenever they came out; and in this they would find complete happiness.

Some men become despondent, and even morose, under very light afflictions. Others remain cheerful under very severe suffering. The former accomplish very little in the race of life, while the other class often do more than men in good health. Lindley Murray was forty years in bed, and few men of his day excelled him in usefulness. John Calvin was an invalid; and collateral history intimates that St. Paul was also. Thomas Hood and Alex. Stevens suffered with every breath. As a general rule, invalids should, in self-defence, engage in useful pursuits.

According to our observation a majority of men become, to a great extent, mentally inactive at the age of forty to forty-five. True, in a narrow range of subjects, with which they have been heretofore familiar, they may manifest a good degree of mental activity: but they seldom have the energy to reach out after new lines of thought. It is fortunate for them if they have previously cultivated habits of steady, or systematic thought. Will-power is one of the first mental faculties to become weakened; and when once a man has given up his mental industry, he seldom is able to force himself to take hold of his former tasks.

We wish to benefit our younger professional brethren by these remarks. If they will cultivate the habit of writing their thoughts, they will acquire accuracy in thinking, and their thoughts will expand by the exercise. It is a sad mistake to regard the close of a college course as the termination of the educational career.

CHEMISTRY, DRY?—THAT DEPENDS.

PROFESSOR STUBBLEFIELD is quoted as having said, "Every one who had the privilege of a regular curriculum remembers that the most despised, obscure, and generally uninteresting branch of the whole course was chemistry."

Such has not been our observation. In 1847 and 1848, Professor John Locke, of the Medical College of Ohio, lectured at 2 P. M. A narrow hall-way led to the door of his lecture-room. So anxious were the classes to get seats desirable for hearing the lectures and witnessing the experiments, that by 1 P. M., and sometimes before it, that hall-way would be crowded full its entire length. And this was an accompaniment of every lecture. But

you will say he was an extraordinary teacher. Then take another illustration, where the teacher was certainly not above ordinary :

While the present writer was connected with the Ohio College of Dental Surgery, the attendance on the chemical lectures was equal to that of any other department. We made frequent counts, and cannot be mistaken. Even in the first course of lectures, when the teacher was also a member of the class, and had had but little time to prepare his lectures, this was true. And we still thank that class for its loyalty. It is evidence that the science itself, and not the manner of its promulgation, was the secret of the class's interest in it.

Our observation teaches that whenever chemistry is dry the fault is in the teaching. We have often heard college graduates complain of its dryness, when a little conversation revealed the fact that they had not been taught the laws of combination, or the doctrine of equivalents. Such a course is as dry as is learning to swim without water.

OBITUARY.

DR. L. B. WELCH, WILMINGTON, O.

DR. WELCH died suddenly, while fishing, near Washington C. H., Ohio, April 18, 1890. The following obituary notice was read at the funeral services :

"Luman Birch Welch was born in Scipio, in the county of Tompkins, New York, November 8, 1822. His parents moved to Huron County, Ohio, when he was twelve years old. He attended school at the Norwalk Academy under the Presidency of Bishop Thompson, of the M. E. Church. Afterward he studied medicine, practicing in Knox County, Ohio. Thinking he would prefer some especial line of work he chose dentistry, working hard to acquire the knowledge necessary under the disadvantages of forty years ago, even manufacturing himself the first set of instruments he used.

After years of successful practice the honorary degree of Doctor of Dental Surgery was conferred on him in 1882 by the Ohio Dental College.

He was joined in marriage to Chloe Etta Griffin, of Fitchville, Huron County, Ohio, October 29, 1848. The January fol-

lowing they moved to Wilmington where they ever since have had their home, and for over forty years his residence and office have been on the corner of Walnut and Locust streets.

To Dr. Welch and wife were born three children, Charles, also a Doctor of Dentistry, being the oldest and only one surviving.

Soon after settling in Clinton County he became interested in the study of fossils and archæology, which has been his delight for years. His extensive and valuable cabinet of specimens attest the amount of work he has done. His love of nature and of out-door life were proverbial, and so we can but think it fitting that the happy spirit should lay down its tenement of clay on the green bank of the beautiful stream of Compton Creek, under the drooping willows, on the sunny day of April 18, 1890."

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

POISONING FROM RED RUBBER.—PROF. HASKELL calls attention to the following: Prof. Salisbury says some of his students have used the copper test for mercury in rubbers. No response has been obtained *before* vulcanizing, but *after* vulcanizing, evidence of *abundance of mercury* has been obtained, showing a change to have taken place due to a more soluble compound, or to metallic mercury.—*Mitchell's Chemistry*.

DECOMPOSITION OF THE CONTENTS OF THE DENTINAL TUBULES AS A DISTURBING FACTOR IN THE TREATMENT OF PULPLESS TEETH.—After microscopic examination, DR. W. D. MILLER says: The conclusion at which I have arrived through the examinations, if I may be allowed to draw any conclusion at all after an examination of only nineteen cases, is that we need pay no regard whatever to the contents of the tubules in the treatment of root-canals. The tubular infection is so superficial and so slight that an action upon the pericementum appears to me to be altogether out of the question.—*Extract from Cosmos*.

A METHOD OF ADJUSTING A RUBBER LIGATURE TO A REGULATING CASE.—I have never seen it used by anyone else, and I

think it is original—still it may be very old. Most of us are accustomed to using buttons, hooks, etc. I simply make a hole of proper size through the rubber plate, and on the palatal surface I countersink with a square-ended bur. I then take a silk string and pass it through the loop and pull the end of the rubber ring through the rubber plate, and the resilience of the rubber will fill the countersink in the plate and hold the ligature firmly. I then clip the string off even with the plate and leave it in the loop.—DR. HAM, in *International*.

OXYPHOSPHATE FILLINGS.—There are a few points about oxyphosphate fillings worthy of note. We have all noticed that what is left on the mixing dish is usually more adherent and harder than what we put into a cavity. Both these facts depend on circumstances which are usually absent in the mouth. To make a dense filling it should be allowed to set thoroughly before the dam is removed, and moisture should be excluded for at least twenty-four hours. This may be accomplished by using a coating of chlora-percha over the finished surface of the filling. If the dam is left on until this varnish has hardened by the evaporation of the chloroform it will not wear off for a week, and I have known it to last two months. Such fillings are comparatively permanent. Where we wish to utilize the sticking or cement quality of this material, the best result is obtained by first lightly coating the surfaces with the liquid. This is why the material is so adherent to the slab. I have thus cemented regulating fixtures to teeth, and at the completion of the work found it troublesome to detach the cement from the enamel after the fixture has been forced off.—DR. OTTOLENGUI, *Inter. Jour.*

A VALUABLE TOOTHACHE REMEDY.—For violent toothache dentists may depend upon the following combination for its marvelous and instantaneous effects. It is a remedy of unrivaled power and absolutely reliable. "Break a hypodermic tablet of $\frac{1}{4}$ grain morphine sulphate, et utrophine sulphate 1-150 grain in four parts, dissolve one part in ten drops of *warm, well, spring or river* water thoroughly. A perfect solution of the partial tablet having been made, it is drawn up into the syringe and the contents thereof slowly and cautiously injected into the hard gums surrounding the aching tooth. Several applications may be made until all of the contents of the syringe are injected.

No danger of bad after-effects can result from the dose used, as it represents but 1 16 grain of morphine sulphate and 1-600 grain of the powerful alkaloid derived from belladonna, "atropine sulphate." "*Sulphate* of atropine is freely soluble in water, the pure atropine is not. Tablets of the above formula may be purchased of John Wyeth & Brother, of Philadelphia. They will prove an invaluable addition to the armamentarium of every progressive dentist." Always prepare a *fresh solution for every case*. —DR. BOWNE, *Amer. Jour.*

A PROTECTOR FOR THE UPPER TEETH WHILE EXTRACTING LOWER TEETH —The profession is well aware of the danger of breaking or of chipping the upper teeth by a blow from the forceps while extracting a lower tooth, especially one that is more or less exostosed. Careful operators usually apply a napkin against the upper teeth just over the tooth to be extracted, and those who have used this method have found great difficulty in keeping the napkin in place, as the hand that holds the napkin is in use under the maxilla, and therefore cannot with safety be depended upon for the double service. To overcome the difficulty take an impression of a medium-sized natural upper denture; take a cast of it, wax the cast over the teeth to about the thickness of an eighth of an inch on the cutting edges and running back as far as the second bicusps, allowing the wax to reach only to the margins of the gums, and made much thinner than on the cutting-edges. Then invest as in any case to be vulcanized, and pack with soft or velum rubber, preferably the black. After vulcanization trim with sharp scissors, boil and wash, and allow to remain in the air for two or three days. I suggest the making of three sizes. Being made of soft rubber insures a fit, as the elasticity of the rubber allows it to be adapted to any mouth and holds it there securely. Vulcanized soft rubber after a time becomes hardened and brittle to a certain extent, as is seen in artificial plates. When in this condition, place it in boiling water, adding a little borax, and allowing it to boil from five to ten minutes. This will restore the elasticity to the rubber, and it will then be in as good condition as when first vulcanized. I think a trial will convince anyone of its usefulness and fully repay him for any trouble he may have had in making the device. —W. G. FOSTER, D. D. S., Baltimore, in *Cosmos*.

Societies.

"Wherewith one may edify another."

MEETINGS.

Kentucky State Dental Association meets annually, first Tuesday in June, 1890. Next meeting in Louisville.

Michigan State Dental Association meets annually. Next meeting at Jackson, June 3, 4 and 5, 1890.

Indiana State Dental Society meets next at Lake Maxinkuckee on the last Tuesday of June, 1890.

North Carolina State Dental Society meets in Wilmington, on the fourth Wednesday in June, 1890.

INDIANA STATE DENTAL ASSOCIATION.

THE thirty-second annual meeting will be held at Lake Maxinkuckee, on the last Tuesday in June, being the 24th inst., and continuing four days.

The State Board of Dental Examiners will meet at the same time and place.

TERRE HAUTE, IND.

R. W. VAN VALZAH, *Secretary*.

COLORADO STATE DENTAL ASSOCIATION.

THE annual meeting of the Colorado State Dental Association will be held in Denver, Colorado, on Tuesday, June 24, 1890.

J. M. PORTER, *Pres't*.

C. F. DODGE, *Cor. Sec'y*.

GEORGIA STATE DENTAL SOCIETY.

THE 22nd annual meeting of the Georgia State Dental Society will be held at Gainesville, Ga., July 9, 1890. All dele-

gates to the Southern Association are cordially invited to meet with us.

L. D. CARPENTER, *Cor. Sec'y.*

NORTHERN OHIO DENTAL SOCIETY.

THE annual meeting of this society was held at Canton, Ohio, May 13, 14, 15. The attendance was good and the papers presented were interesting.

The following officers were elected for the ensuing year: Dr. F. S. Whitslar, Youngstown, President; Dr. F. H. Lyder, Akron, Vice-President; Dr. Henry Barnes, Cleveland, Cor. Secretary; Dr. F. F. Douds, Canton, Rec. Secretary; Dr. Chas. Buffett, Cleveland, Treasurer.

The next meeting will be held in Cleveland, May, 1891.

NORTHERN INDIANA DENTAL SOCIETY.

THE third annual meeting of the Northern Indiana Dental Society was held May 6th and 7th at Goshen.

The papers read were numerous and interesting, and the members were well pleased with the meeting and the hospitality of the Goshen dentists.

The beautiful summer resort, Rome City, was selected as the place for the next meeting in the hope that the hunting, fishing, and boating which abound there may attract those who might otherwise remain at home.

Officers for the ensuing year are: B. P. McDonald, Goshen, President; J. D. Coyle, Ft. Wayne, Vice-President; C. W. Leake, Goshen, Secretary and Treasurer. Executive committee, J. M. Teal, Kendallville; C. W. Leake, Goshen; S. M. Cummins, Elkhart.

CHICAGO DENTAL SOCIETY.

At the annual meeting of the Chicago Dental Society, held on Tuesday, April 1, 1890, the following officers were elected for the ensuing year: President, C. N. Johnson; 1st Vice-President, C. H. Thayer; 2nd Vice-President, I. A. Freeman; Secretary, A. E. Baldwin; Cor. Secretary, T. L. Gilmer; Treasurer, E. D. Swain; Librarian, A. W. Harlan. Geo. H. Cushing to succeed

himself on the Executive Committee. C. F. Hartt, E. A. Royce, and S. B. Palmer, Board of Censors.

T. L. GILMER, *Cor. Sec'y.*

KANSAS STATE DENTAL ASSOCIATION.

AT the recent meeting of the Kansas State Dental Association held at Topeka, the following letter from Dr. Crouse was read:

DR. C. E. ESTERLY,

CHICAGO, April 29, 1890.

Sec'y Kansas Dental Society,

Dear Doctor:—I wish to state to the dentists of Kansas now in session, that the Dental Protective Association of the United States, can guarantee protection against any of the patents now owned by the I. T. C. Co. According to the advice of our attorneys, Messrs. Offield & Fowle, we have sufficient evidence to show that any patents now owned by the C. Co. are not worth the paper they are written upon.

The fact the C. Co. have not sued any of our members nor are they pressing the old suits since the P. Asso. was formed, is evidence that they know their patents will not stand the test of the courts. Yet no member of the profession can afford to test the validity of any one of their twenty-six patents single-handed and alone; it would be cheaper to submit to any demand the Co. might make.

At present the entire profession are receiving the benefit of the influence of the P. Asso., and we feel that each man ought to contribute his mite. The small sum of ten dollars from each member is more than compensated for in the lessening of the annoyance practitioners would receive had we no organization for defence.

It is not the design of the P. Asso. to protect the entire profession, but only its members, and the time is coming when only members will receive its benefits.

I hope to receive word that *every* member of the Kansas State Dental Society who is not already a member of the P. Asso. has joined at this time. We hope to get all members of the profession who have not already done so to join this year.

Yours truly,

J. N. CROUSE.

Much was said by those present in favor of the movement, and the following resolution was offered and adopted :

Resolved, That we thoroughly endorse the Dental Protective Association of the United States and urge upon every member of the dental profession to join the Association and send to Dr. J. N. Crouse, of Chicago, its President, the initiation fee of ten dollars.

The twentieth annual meeting of the association will be held at Wichita, commencing Thursday, April 30, 1891. The newly elected officers are: President, T. K. Aitken, Valley Falls; 1st Vice-President, F. O. Hetrick, Ottawa; 2nd Vice-President, J. A. Roberts, Sabetha; Treasurer, R. A. Wasson, Ottawa; Secretary, C. E. Esterly, Lawrence; Member Board of Censors, S. S. Noble, Wichita.

C. E. ESTERLY, *Sec'y*.

INVITATION TO THE INTERNATIONAL MEDICO-SCIENTIFIC EXHIBITION.

IN connection with the Tenth International Medical Congress, to be held in Berlin August 4th-9th, 1890, there will be an International Medico-Scientific Exhibition.

The undersigned Committee of Organization has been authorized, by the representatives of the medical faculties and leading medical societies of the German Empire to make the preliminary arrangements. We therefore cordially invite all who may wish to exhibit or participate in the above exhibition. All exhibits, however, to be of a scientific nature.

The exhibits expected will be as follows :

1. New or improved scientific instruments for biological and special medical purposes including apparatus for photography and spectral analysis pertaining to medicine.
2. New pharmacological chemical substances and preparations.
3. New pharmaceutical substances and preparations.
4. New food preparations.
5. New or improved instruments for internal and external medicine, and allied specialties including electrotherapy.
6. Plans and models (new) of hospitals; houses for convalescents, disinfection, and general bathhouses.

7. New appliances, such as pertain to nursing the sick, including the methods of transportation, and baths for the sick.

8. Apparatus (new) for hygienic purposes.

The special committee on "Exhibition" consists of the following gentlemen: Commerzienrath Paul Dorffel, H. Haensch, Director Dr. J. F. Holtz, Director Dr. L. Loewenherz, Regierungsrath, Dr. J. Petri, H. Windler, and the Secretary General of the committee of Organization. The names of the associate members of the Exhibition Committee, as well as the names of the heads of departments, will be made known shortly, also the conditions for exhibitors.

For applications for exhibits, and information, please address Dr. O. Lassar, Secretary General, Bureau of the Tenth International Medical Congress, Berlin N. W. Carlstrasse No. 19.

Please designate all mail matter relating to the exhibition, "Exhibition Affairs" and also enclose a visiting card or card of the firm, on which the name and residence is plainly written or printed.

The Bureau is open for the present from 5 to 7 o'clock P.M.

THE COMMITTEE OF ORGANIZATION OF THE TENTH INTERNATIONAL MEDICAL CONGRESS.

Dr. Rudolf Virchow, President; Dr. E. von Bergmann, Dr. E. Leyden, Dr. W. Waldeyer, Vice-Presidents; Dr. O. Lassar, Secretary-General.

Books and Pamphlets.

A NEW MEDICAL DICTIONARY. Including all the Words and Phrases used in Medicine, with their proper Pronunciation and Definitions, based on Recent Medical Literature. By GEORGE M. GOULD, B.A., M.D., Ophthalmic Surgeon to the Philadelphia Hospital, etc. With Tables of the Bacilli, Micrococci, Leucomaines, Ptomaines, etc., of the Arteries, Muscles, Nerves, Ganglia and Plexuses; Mineral Springs of U. S., Vital Statistics, etc. Small octavo, 520 pages. Half Dark Leather, \$3.25; Half Morocco, Thumb Index, \$4.25. Philadelphia: P. Blakiston, Son & Co.

ITS AIM AND SCOPE.

Concerning its aim and scope the author in his preface says that his purpose has been—

"1. To include those *New Words and Phrases* created during the past ten years—a period rich in coinages—which appeared destined to continuous usage. There are certainly thousands of these, and in their compilation I

have especially endeavored to cover the latest results in the study of Bacteriology, Ptomaines, Leucomaines, Electrotherapeutics, Embryology, Physiology, Pathology, etc., and in the various special branches of medicine, such as Ophthalmology, Otology, Laryngology, Gynecology, etc.

2. To frame all *definitions* by the direct aid of *New, Standard and Authoritative Text-Books*, instead of making a patchwork of mechanical copying from older vocabularies.

3. While neglecting nothing of positive value, to *omit obsolete words* and those not pertinent to medicine except in a remote or factitious sense.

4. To make a volume that will answer the needs of the medical student and busy practitioner, not only by its *compactness of arrangement* and *conciseness of definitions*, but also by its *convenience of size and price*."

There is tabulated in alphabetical order, large groupings of facts, and in such a manner that a quick and thorough recognition of the bearings and relations of each and of the whole are readily seen. The tables of bacteria, leucomaines, ptomaines; of muscles, nerves, arteries, ganglia, plexuses; of abbreviations, prefixes and suffixes used in medicine; of comparison of thermometers; of weights and measures, mineral springs, vital statistics, etc., will prove very serviceable, and are not to be found in any other work of the kind.

The author has given the work, so far as its scope would allow, a broad usefulness by furnishing, beside the definition, accessory information germane to the word or subject, such as the tabular matter, preparations, effects, uses and dosage of drugs, tests in urinalysis, etc.

Our Aftermath.

DR. AND MRS. OTTO ARNOLD, of Columbus, Ohio, expect to sail for Europe in June, where they will spend several months in foreign travel.

DR. W. H. WHITSLAR, of Youngstown, Ohio, through invitation of the faculty, delivered a course of lectures on Embryology this spring at the Dental College, University of Michigan.

MARRIED.—At Osceola, Ind., March 27, 1890, Dr. Irvin Myers and Miss Ella M. Teel.

The JOURNAL extends congratulations and best wishes.

DR. HOMER JUDD, DEAD.—Dr. Homer Judd died on May 20, 1890, at his residence in Upper Alton, Ill., at the age of 70 years. He was one of the leading lights in the dental profession of Illinois, and at the time of his death was president of the Illinois State Dental Association. He was the founder of the St. Louis Dental College, and president of the Judd Mining Company, which owned one of the most valuable silver mines in Colorado. —*Daily Paper*.

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

PRESIDENT'S ADDRESS.*

BY C. S. CASE, M.D., D.D.S., JACKSON, MICH.

At this, the thirty-fifth annual meeting of the Michigan Dental Association I again have the honor of addressing this body as its President, and while I can but justly feel proud of the distinction of a second term as your presiding officer I regret that your choice had not fallen upon some one of the many whose executive ability would have enabled them to serve you in a more able manner. But I am consoled by the thought that you will accord to me your usual aid and indulgence should questions arise that require more than ordinary knowledge of parliamentary rules.

I think I may say with some little pride that the meeting a year ago at Grand Rapids was an exceptionally good one in every particular; and now if this meeting proves as successful as we have every reason to expect—judging from the program and the many assurances of a large attendance—it may be taken as *prima*

*Delivered before the Thirty-fifth Annual Meeting of the Michigan Dental Association, at Jackson, Mich., June 3, 1890.

facia evidence (and we congratulate ourselves upon the fact) that the Michigan Dental Association has arrived at that stage of development and maturity which makes it no longer necessary—as was believed in former years—that our meetings must be held in Ann Arbor, Detroit or any other special locality in order to assure that success which will make them worthy to be called the annual meetings of a State dental society. In fact, I am still of the opinion, as expressed in my address of a year ago, that western and northern portions of the State should cease to be shunned in selecting places for our meetings. There is a large number of dentists in these localities who rarely if ever attend our conventions or take the slightest interest in their proceedings, but who, I feel assured, would become more prominent, and an honor to the profession if some inducement could be thrown around them to enter our fold, with its influences for professional attainments and conduct, and the only way to accomplish this result is to hold our meetings occasionally in their vicinity.

We have a number of live cities west and north from which to make a choice. Among these may be mentioned Kalamazoo, Battle Creek, Niles, Saginaw and Bay City. Nor should we forget that our State affords many delightful summer resorts, where, if it please the association, we could combine the pleasures and rest of an outing with the profit and instruction of a dental meeting.

No need to have the slightest fear of failure wherever you decide to go if you are careful in the selection of your officers. Choose men who are not only able but willing to do the work assigned to them, men who will use their best efforts to fill your programs so full of interesting and instructive things which pertain to dentistry proper that there will be no more room for those lengthy and tiresome displays which have characterized some of our meetings in the past—things which may be interesting and desired by a few, but as I understand it, not the purpose or aim of this society. The majority of us are here to learn something practical about dentistry, and in order to make these meetings rousingly successful we must always be able to go from them with the feeling that we have been benefited and are more capable of fulfilling the demands of our profession.

The dental society should be looked upon as a school, or if you please a practitioners' course, organized and run for the sole

purpose of giving information to its members in regard to the more advanced thought and methods of a fast progressing profession. Here we should expect to find men who are vastly our superiors in special branches, because they are men who have devoted the main portion of their professional thought and energy to special channels into which they have naturally drifted by peculiarities of ability, and by whom we should be as glad to be taught as a student by a professor in a dental college.

There is an unfortunate characteristic of this association that I have not noticed displayed, to such a marked degree at least, by other dental societies. Some of our members who stand in the front rank of the profession, who have gained a high reputation both at home and abroad, are the last ones to willingly contribute papers or clinics to our program. When they are asked, we are told they haven't time, etc., and yet we often see their names as authors of interesting articles and papers read at other societies. It would almost seem as if they considered it rather beneath the dignity of their high position to read a paper or show their manipulative skill and methods before this little Michigan Association and that it was sufficient if they honored us with their presence and critically discussed the arduous efforts of the executive committee to make these meetings interesting and instructive.

We were told by some of these gentlemen at our last meeting that clinics at dental society meetings were as a general thing a failure; that one reason why the best operators would not operate was because the facilities afforded would not admit of their doing the work as perfectly as in their own offices, and many other things were said calculated to dampen the ardor of those who had worked so hard to make this modern and admittedly instructive branch of advanced dental societies a prominent feature of *our* Association. It is not expected, I think, that one can produce as perfect an operation at a dental clinic as when surrounded with the conveniences and unobstructed facilities of one's office. But it is not the *result* of an operation, the finish of a filling, or the perfected adjustment of a crown, that gives instruction. It is rather the *methods* pursued by that operator to produce a certain result—the instruments and material that he uses and the manner of manipulation. It is not supposed that men will come here to perform experiments or any ope-

ration which they have not repeatedly and successfully performed elsewhere, nor one so old that the result in any event would be a matter of question; therefore, whether the operation is as perfectly performed here as it would have been under other circumstances is a matter of secondary importance so long as we have seen the ways and methods of a skillful operator. It is not claimed that it would be particularly instructive at this day to see the rubber-dam applied or gold foil packed into a cavity, however graceful and rapid the operator or perfectly contoured and polished the filling unless there was some unknown and helpful method or material used. But I believe that a large proportion of the men who attend these conventions would be benefited by seeing a skillful dentist *approach* a dead or exposed pulp in the most approved manner; his method of treating, capping or filling root-canals; the preparation of a cervical border; the use and application of new and improved matrices; the method of obtaining space for properly contouring a filling; the exhibition of new and useful preparations of gold and the most approved manner of manipulating them, and many other things. Then if that operator would consider it a part of his business to use his tongue as well as his hands many of us would go back to our offices with new knowledge, thoughts and determinations impressed upon us with a force which no amount of study or didactic method of instruction could begin to equal.

If this view of the question was more fully appreciated and entertained by those members of this association whose skill has gained for them a name in whatever land the profession of dentistry is practiced then our clinics might become not only unquestionably instructive but by far the most attractive part of our meetings.

It is not too much to say that large numbers who rarely attend our meetings would be on hand if Drs. Taft, Watling, Field and other notable operators were down for a clinic, and how many of *us*, think you, would not be greatly benefited by such an exhibition?

A few days ago I stood by the chair of one of the above named gentleman for a few minutes and while urging him in my most persuasive tones to do something for us at this meeting I caught an imperfect view of a narrow yellow ribbon, which looked like Williams' crystalloid or electric gold, being folded

rapidly back and forth into a cavity and condensed with the electric mallet. As I turned away I could but realize—as I believe to-day—that if that simple operation, which was so common to him, could have been seen by many a graduate and even older practitioners who had been taught only the use of foils and other methods, its instructive influence would have been incalculable.

In the fall of '70, after being with Dr. Jerry Robinson for nearly five years as student and partner, I had the pleasure of seeing Dr. J. Taft put in a gold filling at Cincinnati. Up to that time I had seen but one man operate and this opportunity was simply a revelation to me. At that time the rubber dam was in its infancy and the loud blowing whirr of a pneumatic dental engine—a primitive form of this machine—was among the wonders that so impressed the whole operation upon my mind that I could now describe its minutest detail, and even had I received no further instruction from that hand the opportunity of seeing that simple operation would have been a great benefit to me. I don't mean by that that the work was especially remarkable or superior to that which I had seen before, but it showed me a different way, a thing that is as possible among the dentists of to day as then. One reason why men cling to old, and sometimes imperfect, methods is because there are no opportunities offered them for seeing the ways of others.

A skillful dentist of over twenty-five years' experience, said to me the other day that he had often seen the time that he would have gladly given ten dollars to be allowed the opportunity of going to the offices of other dentists in his city and watch them operate. This was not an indication of weakness or inability but rather the healthy and natural desire of an experienced operator who had developed to that degree which had enabled him to recognize the special ability of others; and what is more, it was a yearning for that method of instruction which cannot be obtained from papers, periodicals or text-books.

Excepting young graduates, whose high estimation of their own ability is always to be expected, the class of dentists in every community who imagine they can be taught nothing are usually the ones who are the most imperfectly informed. They never seek knowledge of their local confreres, whose capabilities they are ever ready to underrate and whose methods they believe

far inferior to their own; nor do they devote much of their time to read the current dental literature for fear, I suppose, it will interfere with the transcendentalism of their own thoughts and methods, and they rarely attend dental conventions, whose proceedings they not unwillingly slur as unimportant.

These remarks do not apply, however, to all who do not join dental associations, for I am acquainted with a number of dentists in this category who possess superior qualities and ability.

A few months ago I saw two large approximal cavities in inferior bicuspid filled by a young but skillful dentist whose business push had given him considerable notriety and a large practice, and who, I have reason to believe, imagined he was doing good work according to the most advanced and approved methods. There was used in this operation a Freeman matrix, Perry separator, Williams' crystalloid gold and rolled platina and gold, the whole operation being done with an ease and rapidity that was something of a surprise, I imagine, to the patient. Up to that time he had known nothing of the working qualities of the Perry separator or crystalloid gold. Here he was forced into a peculiarly favorable position for judging by observation and experience of the usefulness of two modern radical improvements in dentistry, which, I am pleased to say, produced such a favorable impression that he immediately sent for a whole set of the separators and commenced using the crystalloid gold. And yet had this operator, who with considerable reason prides himself upon being at the top, visited a number of important society clinics he might have seen the practical application and advantage of these implements at a much earlier date, to my certain knowledge as early as the meeting of the medical congress at Washington.

At a clinic of the American Dental Association I saw a matrix adjusted by Dr. Darby for a filling in the post-approximal surface of a superior bicuspid, the cavity being filled with remarkable rapidity by a New York City dentist by the Herbst method with Walrob gold. When the matrix was removed the palatine border of the filling was found to be quite imperfect, and consequently, so far as the filling was concerned, it was a decided failure. And yet that whole operation—the exhibition of peculiar implements, material and methods—was fully as instructive as it could have been had the result been as perfect as it no doubt

would have been in the hands of an Herbst or under more favorable surroundings. And while this slight and most natural defect had its lesson, the clinic on the whole was a success and did not deter me from employing the method, as I have done many times since in a certain class of operations, with the greatest satisfaction.

From these few examples which have fallen under my own observation I think we may draw a lesson in favor of making clinics and practical demonstrations a more prominent feature of our association, and of ridding ourselves of the fantastic notion that one is *expected* to operate here with the same graceful ease and perfect skill that he would at home, or that it is the final result and not the whole operation itself that should be considered the instructive part. And further, even the best of us, if debarred from seeing the application of new and improved methods which others more ingenious adopt or invent, are liable to fall into a rut, and, too, while imagining that we have arrived at the acme of professional ability.

There is another side to it not less important to the members of this association who hope for a larger attendance and the full development of latent ability, especially among the younger members of the profession in this State. Many men will not afford the time and expense of attending a dental meeting which offers no attractions for knowledge other than will subsequently appear in the published proceedings. Nor can we hardly expect men to come here for the sole privilege of *seeing* dentists say that which can be leisurely read and more perfectly digested at home without the expenditure of time and money, to say nothing of the necessity of sitting for hours listening to the display of red tape and much that is as tiresome as it is uninteresting. If we cannot put up something here a complete knowledge of which is unattainable at home, something which no published report can adequately describe, something which must be seen in order to be fully appreciated, then these dental meetings—outside the social attractions which they offer, the interchange of personal ideas and experiences—are, in my humble estimation, a failure.

In regard to papers. It is quite surprising to find so many able men unwilling to write a short resume, to be read at a dental convention, of some one of the many experiences of practice which have a practical and instructive bearing. It isn't possible they have no original thoughts worth listening to, that their

experiences never get out of a routine rut, or that they fear to say on paper exactly what they are doing because of a just criticism which it may provoke. It may be partly due to the belief that a paper in order to be valuable to a convention of dentists must always be relative to something new and peculiar and possess certain stereotyped properties and proportions which would necessitate the expenditure of considerable study and thought. While this is true of many subjects which pertain to dentistry, there are others equally important upon which many of us are more or less rusty or far behind the times and possess so little scientific knowledge that there is always room for instructive essays, from those who are well up in the most advanced principles, even if they contain no more than a description of the common methods of every day experience.

When I asked a prominent dentist to write a short paper on the treatment of a certain stage of alveolar abscess he at first replied by asking if I didn't think "that subject a good deal of a chestnut?" So long as professional men differ widely in their treatment of a common pathological condition; so long as carbolic acid and a free admixture of saliva continues to hold undisputed sway as the *ne plus ultra* in the offices of many experienced dentists, while other and equally, if not more, important drugs are silently tabooed or openly denounced as unworthy a place in our dental materia medica, the subject is most certainly not a chestnut; or if it is, it is one that should continue to be opened on every occasion until there is a more common acceptance—or at least a more general understanding—of the methods and medicaments used by dentists of acknowledged skill and which are to day advocated by the most advanced thought.

If I could say anything to induce the *live* students of Michigan to spill a little more ink for the benefit of their brothers and this association I should feel repaid for my effort. But I will not ask you, as did a recent president of a dental society of its members, to commence now to prepare your papers for the next meeting a year hence, for I should expect that the subject, unless a peculiar one, would become stale and worn out by much handling. I would, however, most respectfully suggest that it be remembered by great and small that the principal purpose of these yearly meetings is to examine and discuss thoughts and methods which are new and worthy to be applied practically to our pro-

fessional work. All that we ask is the idea itself, presented in concise English, and if it covers no more than a half a page of foolscap so much the better. We will manage to exist if it doesn't contain all that has or may be written upon the subject, or if it comes to us unclothed by eloquence and flights of oratory. I believe there is no one within the sound of my voice incapable of presenting an original thought or idea sufficiently intelligible for practical purposes if he will but hold himself strictly to the subject in hand. The great fault with men and especially with beginners who contemplate writing a paper, is they imagine it must be constructed on architectural principles, which immediately loom into such proportions of structure, detail and finish, the common result is—no paper at all, and so, "many a gem," etc. If every member would do his best towards furnishing something instructive to this association at its future meetings, either in papers, clinics, or demonstrations, our sessions would not only require to be extended but the Board of Supervisors would need to transact much of the business of the association—as suggested in my address of a year ago—that valuable time which is now wasted to members in convention could be wholly used in the examination of subjects which pertain to the practice of dentistry.

There are many members who pride themselves upon their regular attendance at our meetings and feel they are doing their whole duty, yet with no attempt or expectation of doing anything but to absorb and be benefitted by the hard work and accomplishments of others, giving nothing in return, and not even the expression of a single idea in discussion. Now I have great sympathy for those who can not speak in public, and I am aware also that in nearly every convention there are some that express themselves in smooth and flowing language, who are known to be far inferior in manipulative skill and the practical application of ideas than others who say nothing, but this is no excuse for the latter class refusing to do something in other departments.

There is another subject to which I wish to direct attention. Our constitution tells us that the object of this association is "to elevate and sustain the professional character of dentists, and to promote among them mutual improvement." I believe this to be not fully appreciated or taken cognizance of in its broadest and most useful sense. In our endeavors as an association, to sustain and elevate our own professional status, it should be considered

equally important (according to my interpretation) to strive for the elevation and improvement of those who are at present without the pale of this society and its influence and who in consequence are pursuing practices that are not only in discord with professional ethics but far inferior to that which they might attain to were their field of opportunities allowed to be enlarged.

I am aware that I am treading upon an old battle ground and have no desire to raise a point that will cause us a useless expenditure of time in debate. I think all will agree that the true and manly way to help a man who is wallowing in the mire of ignorance or unprofessional acts is not to scoff at him from some far off pinnacle, as one unworthy to be associated with men of professional attainments and character but to kindly extend a helping hand, endeavor to surround him with influences which will tend to educate and perfect him, and, what is more than all the rest, strive to make him feel the responsibility of maintaining a position of honor which has been entrusted to his keeping. If such men are made to feel that they are forever ostracised from membership in this society and looked down upon by its members because of a lack of ability or for pursuing methods which they believe to be for their pecuniary interests, then nothing better can be expected of them.

I respect the man who, from lack of skill or business ability, boldly advertises to do work for half price if need be to give proper support to himself and family, and even though in doing this he is shut out from the benefits of this association. That man is a king compared to the member who, in possession of social and professional position and education, adroitly improves every opportunity offered by the press and otherwise to lay claim to a position in the profession which he does not possess, and for the sole purpose of falsely elevating himself in the minds of the community where he has chosen to practice.

But if men have, by their work and skill, risen to the honor of being chosen by national, international or other important dental association to read a paper or perform a clinic I can see no objection to allowing a modest mention of it to be made in their locality; but anything further than this—such as using the trust in a systematic course of advertising, or in an attempt to represent that their special operation (which in reality may have been an exhibition of no special skill) was one of the wonders of

the convention—is, to say the least, an exhibition of weakness, a lack of a proper sense of professional and eternal fitness of things and one which will more often redound to their discredit in the community, to say nothing of the inevitable lowering of their social and professional standing among their confreres.

There are many other things which I as your president believe it my duty to bring before you, but I fear I have already tired you with this somewhat lengthy address. I hope I have said nothing which will be taken other than in the kindly spirit intended; and if at times I have seemed severe it is because I have the future welfare of this association and the general elevation of the profession of dentistry in Michigan at heart.

In leaving the chair which I have had the honor to fill for two years and three months to a more able man, the knowledge that I and my efficient corps of helpers have succeeded in making the meetings of '89 and '90 successful and satisfactory to you will be one of the proudest moments of my life. The honor, if any, belongs to those who have done so much to aid me and to whom I now extend my heartfelt thanks.

One has gone from among us to return no more forever whose aid at our last meeting in providing for our social entertainment and pleasure will long be remembered with grateful feelings, Dr. C. H. Dyer, of Grand Rapids, First Vice-President of this association, died at Mt. Clemens Springs, December 27, 1889. His death was a sudden and unexpected blow to his family and host of friends who remain to mourn the loss of a kind and loving husband and father, a true friend and genial companion. To this society the loss is a peculiarly sad and unfortunate one, for he combined qualities which would have been of the greatest help to us at this and our future meetings. To myself it is especially sad, for in a brief acquaintance I had formed a high regard for his personal qualities and counted much upon his executive ability to aid me in the proper discharge of my duties at this meeting. I would suggest, in closing, that a committee be appointed to draft proper resolutions expressive of the feelings of this association.

DISCUSSION.

DR. GEO. L. FIELD, of Detroit, thought the address of the president the best he had ever heard on such an occasion. He

could most heartily sustain him in every position he had taken. He moved that a vote of thanks be extended the president for the able address he had given at this meeting. The vote was unanimously carried.

DR. W. H. DORRANCE, of Ann Arbor, desired to call attention to one feature of the address, which he wished particularly to emphasize, and that was that too much time was taken up in meetings discussing matters of business and especially when the occasion seemed to be the disciplining of some member for disregarding the code of ethics. Almost every meeting is largely taken up with the consideration of some such business to the exclusion of valuable discussions on scientific subjects of vital interest to the members of the association. He suggested a change of the constitution that would provide a committee to whom all such subjects should be referred, if not for final action, at least for preliminary consideration and recommendation.

DR. J. A. SWASEY, of Chicago, thought the address was full of grand suggestions. The reference in the address to the fact that our best men were not willing to appear as clinicians at dental society meetings, reminded him of the great benefit he once derived from a visit to the office of Dr. J. H. McKellops, of St. Louis. He described the manner of reception given him, and how he was invited to come into the operating room where the doctor was working for a very refined and well dressed lady, to whom he was introduced, and, upon request of the doctor, he was graciously allowed to remain and witness the operation of filling a tooth, receiving great instruction from the methods and manner of using them, with the comments of the doctor. He thought more clinics of this kind would be beneficial at society meetings especially by men of high attainments.

DR. RIX said he agreed with Dr. Swasey, but he did not know how we were to have the advantages of these office visits, for it seemed to him almost impracticable to gain admission to the offices of these great men. He had some times done so, but he felt that one was compelled in a large measure to suppress all feelings of modesty and call upon his reserve assurance in order to gain admission to the operating room of men from whom much could be learned. If these men will not give public clinics or admit you to their operating rooms, how can we expect to get anything from them?

DR. DOUGLAS referred to the time, forty years ago, when it was altogether impossible to gain admission to the operating room or even the laboratory of a dentist. If we complain of these things in this day, how much more unfortunate were we then when there were but few dental journals and societies, and only a few who were willing to describe their methods to a brother practitioner.

DR. METCALF, of Kalamazoo, being called out by Dr. Field, said he could not attack any position taken by the president, as he was thoroughly in accord with all he had said, and he could but emphasize all that had been said, therefore there was no chance for an argument for him, but he believed there were men in the house that had been hit by the address and he would call upon Dr. Field as one of them to get up and defend himself.

DR. FIELD, of Detroit, thought the address was full of meat, no skin and no chestnut; agreed most heartily with all the positions taken by the address. I want to call attention to one feature of the address in particular, and that is to the practice of a man occupying an honorable position or standing in the profession, of making use of questionable means to keep his name prominently before the public. It is surprising to see the methods that are made use of to notify the general public that a certain distinguished or well known dentist of this or that town has been highly honored in some unusual way. It usually appears in the local paper, and of course the irrepressible newspaper reporter is to blame for it. But all such tricks are unworthy of a gentleman and lowering to the dignity of the profession, if not an actual violation of the code of ethics.

DR. W. H. JACKSON, of Ann Arbor. We talk too much about violations of the code of ethics. What we should do would be to take notice of these offences and hunt them down, establish the responsibility and place it where it belongs; then prefer charges and have the offenders punished as they deserve.

I would like to emphasize what has been said in regard to witnessing the operations of such men as Drs. Field, Metcalf, Hawkshurst, Allport, Swasey, Crouse and others. It was a great benefit to me to be permitted to witness these men in their own operating rooms.

DR. HARROUN, of Toledo, criticised the manner of conducting clinics. There is too much crowding around the chair of the

operator, too much interrupting of the operator by useless questions. Some persons imagine they are the only ones to receive any benefit and so monopolize the whole space about the chair as well as the operator's time. The operator should provide himself with his accustomed surroundings as nearly as practicable, and explain his methods in a systematic way, illustrating them as the work progresses. It is the method we are particularly interested in, not so much the wonderful skill of the operator.

A CONSIDERATION OF DENTAL PATENTS.*

BY L. D. WOOD, D.D.S., GRAND RAPIDS, MICH.

I HAVE very reluctantly consented to undertake the preparation of a paper on this subject, though I am free to confess what will appear later, that it is one in which I never have had any special interest, and of which I have but trifling knowledge. I am not ignorant of the fact that much has been said and written with reference to patents on inventions which find employment in our chosen field of labor, and in a much more acceptable manner than I am able to command; but I am influenced by a desire to discuss it on its merits, without partiality, and by provoking friendly discussion gain more light on a vexed question. I shall, therefore, take the liberty of begging your patient indulgence for the little time I shall occupy in presenting a very imperfect and incomplete view of the subject before us.

Patents, in a general way, are the product of a comparatively recent civilization, dating back only to the time of Luther—the morning star of the Reformation. This has been a period characterized by the most wonderful discoveries and inventions, great progress in the sciences and arts, and a general uplifting of the race to higher standards, nobler actions, and grand achievements. The real, substantial advancement of the world has been made during this time.

It is but little more than two hundred years since modern science began to have any realization of the momentous problems which confronted it and sought their solution, and it was then that legislative enactments were suggested and undertaken look-

* Read before the Michigan State Dental Association, at Jackson, Mich., June, 1890.

ing to the stimulation, to the production of inventions and processes, and affording a self-earned reward to their originators. As inventions began slowly to put forth inventors came to realize the need of some protection for the capital they had invested in their infant industries, and a remedy was found in governmental grants, rights, or as now known, patents.

No savage people ever had a patent law for the reason that their wants are so simple that they have no need for inventions, and consequently no inventors to protect. It therefore follows that patents are not the only outcome of a civilized state of society, but rather belong to it in its most advanced and enlightened conditions, following in the wake of investigation, discovery, learning, development.

A patent may be defined to be an exclusive right granted to an individual to manufacture and sell an article of commerce of his own invention. This right is secured to him for a term of years and becomes an article of property which is transferable and may be defended in courts of law.

But the question which chiefly concerns us at this time is, "May a dentist or other professional man take out letters-patent on any invention he may produce having immediate relation to the uses of the profession of which he is a member?" In other words, "Is it professional or the correct thing to do, to receive revenue from any thing he may control which by its employment in his specialty will help to lessen the ills and add to the comfort of the human race?" "Ought not all discoveries and inventions to become the property of the public if they are adapted to relieve suffering?"

While no question is or has been raised as to the undoubted right of a mechanic patenting the results of his skill and study, shall the man whose occupation is known as a "profession," enjoy the same privilege?

If time allowed, it might be profitable to enter into an inquiry as to just what is comprehended in the terms "trade" and "profession." Where shall the dividing line be drawn? And is dentistry a trade or profession, or both?

If, unfortunately for most writers on this theme, it should be decided that dentistry is chiefly a trade, though of a high order of excellence, the favorite term "professional patents" would become unmeaning and ridiculous for surely it will not be dis-

puted that the occupation of a clergyman or a teacher or an attorney is a professional occupation, and consists in the impartation of ideas but no one ever heard of ideas being patentable.

If you stand at your velvet-upholstered chair and excavate cavities ever so thoroughly, filling them ever so beautifully, you are doing nothing more or less than mechanical work, and so is the sombre-vizaged gentleman who excavates a two-by-six hole in the earth, refilling with all that is mortal of the once proud professional man. The construction of an artificial denture is no more a professional proceeding than is the manufacture of an artificial limb, building a house, or running a locomotive. It is true there is a difference in the amount or degree of manipulative skill employed, but there need necessarily be no difference in the mental attainments of the operators described.

Now, as I do not wish to cause any unrest in the minds of my confreres as to whether they are engaged in a trade or profession, I will not give the dictionary definition of either. It might rudely disturb the sweet equanimity of some who are always ready to jealously defend everything mistakenly called professional.

Since dentistry occupies the unfortunate position which it does—that of a connecting link between the trades and professions—and we have seen that it calls for the employment of methods, instruments and appliances which are necessary in a tradesman's pursuits, and are not essentially a part of a strictly professional calling, it would seem that it is the field *par excellence* for the introduction into and exercise of the highest inventive skill to be had so as to remove its practices to a plane so far above and beyond mere handicraft and the common usages of trades as to command the respect and esteem to which an unquestioned profession is entitled. In proportion as man becomes enlightened and lifted up in the scale of civilization his wants increase, and to meet and supply those wants the combined efforts of the skillful and inventive in every land are constantly taxed to the utmost extent.

The practitioner who undertakes to meet the demands of modern dentistry, confidently placing his dependence in his own unaided resources, and ignoring the advantages derivable from the inventions of others in his specialty, need not be greatly surprised if his efforts result in an inglorious failure. I hope none

will understand me as contending that dentistry is not a profession because its practice calls for the employment of instruments and tools. Nothing of the kind has been intended. Its duties are performed under ever varying conditions, circumstances and surroundings, and its ideas are, or should be, unselfish, expansive, humanizing, ennobling, having to do with the mental, moral, and physical well-being of man. It seeks to alleviate suffering, to extend the average of human existence, and add something to the general fund of knowledge. The man, whether popularly known as a tradesman or professional, who can take a set of natural teeth, covered with calcarous deposits, having devitalized pulps and abscesses, and by treatment and filling restore them to comfort and usefulness, need not be ashamed of his appellation or ability, and if he also possesses the skill and ingenuity to devise an instrument or appliance which shall greatly assist him and his brethren in the duties of their calling, securing patent protection therefor, he is not only a blessing to his profession but a good man of business, and is entitled to praise and encouragement. I have no respect for the nonsense which speaks of a dentist's remuneration for service as "an accident," nor can I conceive of any good reason why a professional man of any kind should be a failure as a financier. But, alas! too often such is the case. Numerous examples will be recalled of men high in our profession, and fertile in useful but unpatented inventions who have dropped by the wayside, early in the journey of life, leaving families in a homeless and penniless condition to mourn their improvidence and want of business enterprise. Charity is a lovely and commendable thing, but by all means let it begin at home. The "dear public" may do for politicians to rave about, but those of one's own household should be far dearer to honest men. Some writers talk as though it was little less than criminal to demand a fee or accept of royalties by inventors, but I have yet to meet the man, engaged in professional work, who is laboring altogether for the good of his patrons and from a love of work without expectation of monetary equivalent. There may be such gentlemen in the legal profession, but there are no such dentists.

The reproach from which our calling is a great sufferer is *not* due to the fact that some few of its members have availed themselves of patent protection on some little invention more or less

useful, but because there are in our ranks so many charlatans, ignoramuses and quacks, who are successful in deluding the public into the belief that they, and they only, are the men of great learning, nobility of character, and phenomenal skill. Their inventions generally are infringements, their startling discoveries usually turn out to be something resurrected from oblivion. They labor under the supposition that there is no difference between reputation and character, and in the place of knowledge substitute bluster and sarcasm if not falsehood. They advertise to charge a certain small fee, but the operation, when performed, always presented unexpected difficulties, requiring unparalleled skill, and of course a large fee is exacted.

These are the men and methods which have done our profession an irreparable injury, and brought disgrace to our brethren who have made inventions and patented them in the honorable desire to profit by the labor and skill devoted to their production.

We claim to be a liberal and progressive profession; if we really are and would prove our claim we ought to be very generous in the encouragement we give to the origination and production of appliances which are adapted to use in our field of labor. The tendency of the times is toward greater liberality of thought, tolerance of opinion, practicality of ideas. Let our actions show that we are *en rapport* with this spirit of progression. A high condition of society is only attainable by the more highly diversified employments, liberal education, and elevating moral surroundings and the general culture of society, like that of the individuals composing it, can be reached only by the widest encouragement. Mere human nature has no standard or supreme conscience by which to square or correct itself. So long as this is the case it must be expected that men will widely differ in their deductions and conclusions.

The conservative wing in the present controversy on the patentability of inventions that are used in our specialty claim that patents restrict the use of inventions and humanity suffers in consequence, and they declare that the public weal is to be considered as of greater importance than the rights of the individual inventor. This rule applies in the case of calamities, nuisances, public improvements, etc., but not in the case of inventions. The public demands and is willing to pay for the best obtainable, though it has no technical knowledge of the advantages of one

method over another. It is the bounden duty of the dentist to analyze and discriminate, making use of the one best suited to the case in hand. If he does not provide himself with the necessary instruments, whether patented or not, to do the work entrusted to his care, in a skillful manner, he is recreant to the confidence reposed in him, and a disgrace to his calling. It can not be denied that there is a commercial side to this question and one whose importance is not to be lightly ignored, though certain fanatical members of the conservative party intimate it is beneath serious consideration. It is little less than infatuation to talk of "having such a consideration for the good of others as to prefer financial loss that they may be benefited," and to contrast the "evil nature" of the commercial side to the "heavenly spirit" of the professional. Such statements are so manifestly untenable as to be ridiculous.

The fact that an invention is patented is no proof that the consumer has to pay an advanced price for it. Let inventors be deprived of the privilege of securing patents and their efforts will cease to be put forth, as inventors, like other mortals, are not working for their health or the fun of it. I do not believe that the small royalties usually received by patentees cut any figure in raising the selling price of dental commodities. Manufacturers having large capital, improved machinery, and skilled workmen, can produce and sell instruments, or anything else, much more cheaply than could the individual inventor; hence, it would seem that the present arrangement is the wisest yet known. The proposition has been made that the government, through a commission of qualified examiners, grant inventors bounties commensurate with the importance of their inventions and that the patent system be done away with.

I believe the remedy for many of the evils of which we complain lies within our own power. We have too many dental colleges; their terms are too short and their courses are not thorough enough. Applicants for admission should be subjected to a rigid examination, that when once admitted it should denote that they were worthy of respect for their mental attainments.

The possession of a diploma should amount to a guarantee that its holder was truly learned in his profession, and it should be something of an assurance that he was of high moral character, pure motives and noble ambitions.

We have many noble, progressive men, but the morale of the profession is not one that will bear too close inspection. There are scores of alleged dentists practicing illegally in this State, but no one seems to interfere with them.

There are members of this society yet living who can recall exhibitions of patented manufactures in its own room by men known to employ some questionable methods, and some of these men have been members of this society.

Gentlemen, these things ought not so to be. The education of our patients is all right and a most commendable thing, but it is not enough; the work should begin in our own hearts and minds. There has been great progress made toward a high ideal in the past generation, but there is much more to make. Let us try to lead the public to a higher appreciation of faithful services, striving meanwhile to correct our own failings and shortcomings, and by exercising honesty, integrity, and uprightness we shall be rewarded in the not distant future by seeing dentistry occupying the position of honor to which its usefulness and worth entitle it.

I have purposely taken a middle ground in the preparation of this paper.

DISCUSSION.

DR. DORRANCE spoke on Dr. Wood's paper, especially on the point as to who shall be admitted as students to dental colleges and as to how they shall be admitted. As a rule now all dental students enter the college directly without ever having had an office pupilage with a preceptor. A great many come directly to the college without ever having had a moments conversation with a dentist on the subject of dentistry. Others come on the recommendation of a dentist. Consequently many of the students that enter college are totally unfit to become good practical workmen because they have no mechanical ability to start with, and cannot be educated in the limited time at the disposal of the instructors, because of other important duties devolving upon them. Then again some have not sufficient literary attainments to enable them to master the scientific studies in a satisfactory manner. Would suggest some form of office pupilage that would determine whether a man was fit to become a dental student before he could apply for admission to a college.

DR. T. W. BROPHY, of Chicago: We have nineteen chartered dental colleges in Illinois. It is an embarrassing problem with us to have to face the fact that any man or set of men can for three dollars procure from the secretary of our State a license or charter to organize a dental college. But all these colleges in Chicago are not organized to educate dentists; they are organized to make money directly, being run as infirmaries where work is done at cheap rates; or they are organized to advertise the men who conduct them. Every State can support one well conducted dental school, but nineteen are too many for even Illinois. And the above explanation will be sufficient reason why we have so many; they are not all educational institutions.

Colleges are criticised for not making better dentists, but I say the colleges are doing all they can to convert the raw material that comes into their hands into skillful and cultured dentists. Men of all sorts are to be found applying for admission to our colleges. Men of good habits of study, but no mechanical ability, not even a germ that can be cultivated. And then again men of natural mechanical skill, but bad students, or indifferent and lazy men will be found in all colleges. These are some of the things that cannot be determined by any preliminary examination. It takes sometimes nearly an entire term to find out that some members of the class will never be a credit to themselves or the school that graduates them. It is my experience that these are the most difficult of all men to convince of their inability. They will protest against the verdict that there is no dentist in them, and insist on being allowed to continue their course; they will refuse to be dismissed or to receive the offer of fees returned, or plead to be allowed to try again to redeem themselves.

DR. A. M. LONG, of Monroe: Would you have the dentist select the student in preference to the college faculty?

DR. BROPHY: I certainly would for this reason. The dentist living in the same community will have better facilities for knowing the habits of a student, whether he is morally fit to enter the profession, whether he has had sufficient educational advantages, and whether he has natural qualifications that will enable him to qualify himself as a skillful workman. A recommendation from a responsible dentist would be a great help to college faculties, and be a means of raising the quality of the students as nothing else can do.

DR. E. J. WAYE, Sandusky, O.: Are the dental students of to-day as thoroughly educated in the scientific branches of the profession as they ought to be?

DR. BROPHY: Yes, the dental student of to-day is better educated in the medical branches than ever before. Because of the rapid growth of dental art, it is almost impracticable to thoroughly qualify a man in the brief time of a college course.

DR. DORRANCE: If students are to enter the college without an office pupilage, I think they should be put on probation the first year and care should be exercised to determine whether a man is calculated to become a good dentist. If he be found to have no capacity for either the work or study required to fit him to assume the important place of a practitioner, he should be advised to give up the study of dentistry and seek some occupation more congenial to his natural endowments. No preliminary examination, however rigid, could accomplish so much as some such plan as this.

DR. J. N. CROUSE, of Chicago: I think it is absurd for colleges to attempt to shift this matter onto the dentists. One-half of the students never consult a dentist about entering the profession, but go directly to the college on their own responsibility, and the responsibility of admitting them rests entirely on the faculties of the colleges. The colleges seem to be entirely satisfied if they find that a man can read and write. This is not enough. Every man should be examined thoroughly, not only as to his literary attainments, but it should be the aim to find out whether he has the qualifications necessary to make a good dentist or not. If not, send him away, and if a man is once admitted and it is afterwards found that a mistake has been made, send him home. The whole trouble in this matter is that every college is striving to get the largest class, and every man that applies and pays his money is received. This is the truth of the matter and the colleges must bear the blame for the incompetent men they are turning into the profession to-day.

DR. W. H. JACKSON: I believe the fault lies with the examiners of the college. It is a very difficult position and it requires a high degree of moral courage to be able to say *no* to a man who has set his mind and heart on entering a profession, to say nothing of the difficulties of determining the character of every applicant. And even after being admitted and found to be

lacking in many elements necessary for the making of a good practitioner, it takes considerable courage to inform a man he is not capable of continuing his course of study to the best advantage to himself and will probably make a failure as a practical workman.

DR. WAYE: We should not look at this matter from the selfish standpoint. We owe something to the community upon whom we inflict a poorly prepared man. An inferior dentist is capable of inflicting incalculable injury upon the unsuspecting public, and a man with the diploma of a reputable dental college to give him a standing can do more harm and be sustained in it, than a man that every one recognizes as a tyro.

DR. BROPHY: When we receive a man into college and take his fee, we are bound to give him a course of instruction, and it is perfectly absurd to expect that any preliminary examination will determine what a man may be or become after he has been through a course of systematic training and study in a dental college. No dental faculty has the time or wisdom to do all that has been suggested in any large measure of cases.

DR. CROUSE: It is the duty of your faculties to take the time to shift out the worthless men if it takes a year to do it. You can't shift the responsibility onto the dental profession, we won't have it.

DR. J. A. SWASEY, of Chicago: Dr. Brophy has told us that we have a large number of dental colleges in Chicago, but he hasn't, according to my notion, given the true reason for this condition of things. The fact is, there are a great many wealthy dentists in Chicago and they adopt this plan for disposing of their wealth. He didn't know whether Dr. Brophy would reject a man any sooner who hadn't a hundred dollars than one who had, but he was of the opinion that some sort of a preliminary course of study either in the college or in the form of an indenture with a preceptor was desirable. This indenture to be considered as a part of the course, and if, at its termination, the student was considered qualified to enter upon a regular college course of study, he should be entered and given proper credit for the time spent with the preceptor. In all cases a fee should be paid for this preliminary course.

DR. METCALF said that it was evident from the discussion that some colleges are run for the money there is in them, and

that if a student could read and write and had the necessary fee, he could enter almost any college he liked. But he knew there were colleges that were not run on this basis, and he thought it was the duty of the profession to select the college to which students should be sent. We should send our students to those colleges in which we know there is no opportunity for the faculty to admit unworthy men to their classes for the sake of the fee they bring. He was glad to say that we had such an institution in our own State to which this objection would not apply.

DR. WOOD was very much gratified that so much interesting discussion had been called out on this point, but he would like to hear something in regard to dentists who are illegally practicing in this State.

DR. G. E. CORBIN, of St. Johns: I have been secretary of the State Examining Board for several years and I have a great many letters notifying me of persons practicing illegally. If I can judge from these letters there are more persons now practicing illegally than ever before. The trouble is that no one is willing to prosecute these persons. A person does not like to do this work even if he should feel it to be his duty to do so. I have heard from one man four times in a little over a year in as many different parts of the State. On motion subject passed.

THE DENTAL PROTECTIVE ASSOCIATION.*

BY J. N. CROUSE, D.D.S., CHICAGO, ILL.

Mr. President, and Members of the Michigan State Dental Association:

When I appear before a body of men like this, to address them in the interest of the Dental Protective Association, I don't know where to begin. I have been laboring earnestly for some time in the interest of the Dental Protective Association, an organization whose principal aim is to bind the dental profession together for mutual protection against the unjust demands of parties wishing to make us divide part of our earnings without any legal claim.

I am here to-day to find out the reason why of the six hun-

* Read before the Michigan State Dental Association, at Jackson, June, 1890.

dred dentists practicing in the State of Michigan, only twenty-five have joined the Dental Protective Association. We have issued and mailed to every dentist in this State, whose address we could obtain, two carefully prepared circulars, presenting the object and aims of the Dental Protective Association, and I am compelled to believe that not one man in twenty has read those circulars carefully or we should have more than twenty-five members from this State.

I come to you with the conviction that you are not aware of the trouble and worry that awaits you if you do not take steps immediately to protect yourselves from the unjust demands of one of the most abominable monopolies that ever threatened the welfare of the dental profession.

I want to tell you something about the International Tooth Crown Co. which claims a patent on almost every process that a dentist uses. This is not the only adversary we have threatening us. This company claims patents on all kinds of bridge-work, both permanent and removable, patents on cutting off crowns of natural teeth, freezing the tooth and destroying the pulp and driving it out with a wedge of wood, patents on filling the end of the root, and on material for setting a pin or screw in the root to hold the crown or bridge, its patents cover almost every form of crown made, those with as well as without bands, it even has patents on taking impressions, methods for getting the articulation, investing for soldering. In fact it patents everything; it can and buys every patent it can get; it makes no difference whether the patent is a valid one or not, as an individual dentist cannot afford to contest its validity, hence the necessity of combining in an association.

But I am here to-day to tell you that the Dental Protective Association, on the advice of its attorneys, the best patent lawyers in the United States, is prepared to defend its members against any patent claim of this company, if furnished with the money necessary to carry on the litigation. This may appear to be a strong statement, but members of the old rubber company assure us that if the dental profession had been organized, as they now are, this company would not have been successful in collecting the eight or ten million dollars that it did. The ten thousand dentists of the United States with a fund of \$100,000, and organized to protect themselves against these unjust demands, will

command respect, and be able to collect evidence, employ first-class attorneys and make an adequate defence, such as no individual could possibly do.

I tell you if it were not for the Dental Protective Association, there would not be more than ten men in this room or in the dental profession in this country that would not be paying a royalty on the meanest patents owned by the International Tooth Crown Co.

It is an easy matter to get a patent on almost anything that is not actually covered by some patent. If there is no interested person to look after this matter what is to prevent the wholesale patenting of every useful device or process now used or to be discovered in the future, and so check the progress of our profession? The Dental Protective Association will not interfere with the granting of lawful patents, but it means to stand between the dental profession and all illegal patents.

How can you help the Dental Protective Association in this work? Don't take out a license from the International Tooth Crown Co. If you do you are compelled not only to recognize all its present patents as valid, but all that it may in the future secure, or forfeit as a penalty \$25.00. If a contract of that nature can be made strong enough to stand, and besides all the money you pay into this corporation makes it that much stronger and enables it to continue its fight with the Protective Association. Send ten dollars to the Association and become one of us, and we will defend your suit for you. The Tooth Crown Company has not sued a member of the Association, it is the man who is not able to make a sufficient defense that will be sued or bluffed into taking a license. The Crown Co. now has a suit in the Supreme Court involving the Richmond crowns, cutting off teeth, extirpating pulps, etc., which we expect they will win, for the reason that at the time the suit was tried, those trying it had not the evidence that we now possess, and which we cannot use in this case. Should this case be won by the Crown Co. it will not discourage the Protective Association or affect the interest of our members, for we have evidence that will be used in new suits which will surely win.

Send us your money and help us to gather evidence, by sending us a record of any crown or bridge-work known to have been done prior to 1881. Thus you will help to fortify us by putting

in our hands the means for defending you, and your peace of mind will be secured at a very small outlay of money. Don't hold on to your money but give it up cheerfully. We will not defend the dental profession, but we will defend the members of the Dental Protective Association.

DISCUSSION.

DR. J. E. LOW, of Chicago, wanted to know of Dr. Crouse what was the attitude of the Dental Protective Association toward patents in general?

DR. CROUSE: The Dental Protective Association has no fight with legitimate patents or with men who invent, own or honorably dispose of their patents. If I was smart enough to invent a good thing I should patent it and sell it too if I could, but I would do it honestly.

DR. GEO. L. FIELD, of Detroit: If the Gaylord suit now pending before the Supreme Court should be decided in favor of the International Tooth Crown Co., it will go hard with the dentists. But there is no fear that the Dental Protective Association will not be able to protect its members at any rate. I would not pay any money to nullify a legitimate patent owned by an individual, but I do object to being bled by a corporation that doesn't care how or where it gets a patent or what the value of the patents it controls may be, so long as they can be used to extort money unjustly from men unable to defend themselves. The old Rubber Co. by secret and underhand methods secured a judgment against me for \$20,000, and the sheriff had levied on my property before I was aware of it, and we may look for just such underhand practices in this case. The Dental Protective Association is organized for the purpose and can take care of your suits better than you can possibly do and I advise every man here to join it at once.

DR. LAND, of Detroit, asked the privilege of the Association to state that he was the author of sixteen patents which he held in the interest of the dental profession, and he was prepared to contribute his ten dollars to the Dental Protective Association as an indication of his approval of its object.

DR. A. M. LONG: It is a matter of interest and commendation that Dr. Land has not sold any of his sixteen patents, as I know he has had many very good offers to dispose of them advantageously.

DR. J. TAFT: It seems to me that here is an opportunity for co-operation on the part of the dental profession that should not be lost sight of. The banding together of such a large number in the interest of a common cause will have the effect of bringing the dental profession into more harmonious relations. I do not object to legitimate patents or to traffic in them, but I cannot indorse the methods of the International Tooth Crown Co. It is a surprise to me that so few in this State have joined the Dental Protective Association. I hope every one here will feel that it is not only his privilege but his duty to join the Association and so indorse its objects and methods and encourage those who are giving their time to its work.

DR. W. H. DORRANCE, Ann Arbor: I feel that Dr. Crouse has done a grand work for the dental profession by taking up this cause, and I feel that we sustain him with our council, sympathy and money. I hope every man here will feel inclined to join the Dental Protective Association and help to carry this war to a successful termination.

DR. G. E. CORBIN, St. Johns: I would like to ask whether there is or can be any further liability of members of the Dental Protective Association beyond the fee of ten dollars required for membership? also if a member of the Dental Protective Association is sued by the Tooth Crown Co., and after being defended by the Association and a judgment is rendered against him, will the Protective Association pay or the defendant? How much could the Company sue for?

DR. CROUSE: The members of the Association may be called upon, by such provision in its constitution, for an additional ten dollars only, and this only in case of extreme need. It is not likely any member will ever be called on for this extra assessment. When a member is sued the Association takes entire charge of the defense, pays all costs of court and lawyers fees, but does not agree to pay the judgment should one be obtained against the defendant. But this need not frighten any one for by United States law the judgment cannot be for more than the royalty would have amounted to if paid as a license, so that no one can lose more than the ten dollars he puts into the Association. Gentlemen, if you will believe me you will never regret the money you put into this work. You don't want some one else to do the work and pay the cost of doing a thing that concerns

you just as much as it does any one else. Pay your share and thus do your share and you will be able to rejoice with us in this grand work when it is finished.

DR. SANDERS, Saginaw: I had several calls from the agent of the Tooth Crown Co. and received several letters from the Company with invitations to take out a license, but I concluded to join the Protective Association and I have not heard from the Crown Co. since.

DR. DOUGLAS moved the appointment of a committee to frame a resolution expressing the attitude of the Michigan Dental Association toward the Dental Protective Association. The motion carried and the president appointed Drs. Dorrance, Douglas and Sanders the committee who reported the following resolutions which were unanimously adopted:

Resolved, That the Michigan Dental Association heartily approves the aim and plan of the Dental Protective Association; and that it is further

Resolved, That it is the duty of every member of the dental profession in this State to join the Dental Protective Association.

It is also *Resolved*, That Dr. Crouse be requested to furnish the dental journals with an abstract of his remarks for publication.

W. H. DORRANCE,

W. D. SANDERS,

— DOUGLAS,

Committee.

A CASE IN HAND.*

BY G. E. CORBIN, M.D., D.D.S., ST. JOHNS, MICH.

THE danger of contracting the disease when exposed to a well-marked case of small pox, has for many centuries been well understood. The contagiousness of measles and of scarlet fever has long been admitted. The possibility of transmitting tuberculosis from one person to another did not seem to arrest any general attention until within the last quarter of a century. In a general way, reason has, perhaps, always understood that each effect must have been preceded by a cause; but we are indebted to the combined efforts of microscopists and pathologists for the tracing,

* Read before the Michigan State Dental Association, at Jackson, Mich., June, 1890.

isolating, and exhibiting of particular disease germs, which, when planted in suitable soil, invariably produce like conditions of disease in any number of human organisms.

A specific bacillus has been isolated, cultivated, propagated and inoculated into the tissues of various inferior animals, invariably resulting in the production of tuberculosis. Cases are well authenticated where syphilis has been transmitted from one person to another by kissing, by smoking the same pipe, and by other innocent but untidy habits. Diphtheria has been transmitted from one person to another by drinking from the same goblet.

Such facts have caused conscientious modern surgeons to be exceedingly particular in all their operations about cleaning and sterilizing their instruments.

Should *dental* surgeons be less so? In November, 1877, I was called in consultation with the attending physician, and found a sallow, despondent, and somewhat emaciated patient who gave the following brief history: Three months previously she had the right inferior first molar extracted, the tooth all coming out at the first effort. She stoutly maintained that she noticed at the time that the beaks of the forceps were disgustingly soiled with dried blood; but they were quickly used, and before she had summoned courage to remonstrate. At the time she felt only disgust for the foulness. At first there was no more pain or soreness than she expected but it did not cease or diminish.

In the course of a few weeks the pain became decidedly severe, and the flesh in and about the socket presented a raw and angry appearance. At this stage the patient conceived the idea that she had been poisoned by the foul forceps, an opinion she maintained until the day of her death. At the time the writer hereof first saw the patient, pain, sleeplessness, anxiety, anorexia, etc., had not only produced emaciation, but a general cachetic appearance; the alveolus was thickened, and partially covered by a soft, brain-like, vascular tumor that protruded from the socket of the extracted tooth. Attempts had been made to destroy it by cauterization.

On such occasions the hemorrhage was troublesome and the tumor was rapidly reproduced and increased in size. Liquid foods only could be taken, and so vascular and irritable was the excrescence that the efforts of deglutition, coughing, etc., were often followed by hemorrhage.

The diagnosis at this stage of the disease was clearly either a soft sarcoma or a encephaloid cancer. As the lymphatic glands in the axilla were already much affected at the time of the consultation it was decided that an attempt at complete extirpation of the disease by excision of the jaw would be futile. The treatment, therefore, was subsequently palliative only. The patient lingered in much distress and died in the following March and in a little less than nine months from the date of extraction.

But that was a case in the mouth.

The "case in hand" was in the palm of my own hand. In February, 1888, in excavating a cavity of decay in a pulpless tooth in the mouth of a young and apparently healthy person, by carelessness I plunged the point of a small excavator, loaded with debris, into the palm of my left hand at just about the middle of the fourth metacarpal bone.

The wound produced was a small puncture just sufficiently deep to pierce the skin and not severe enough to cause the loss of a particle of blood. Indeed, as a matter of precaution, I tried to force a drop of blood from the wound by squeezing it, but failed. I thought of enlarging the opening and cauterizing the parts but did not do so. For a few days the trouble was scarcely noticeable, then for many weeks there was a soft, pulpy condition just beneath the skin surrounded by a slightly inflamed border.

At this stage a free incision seemed called for, but was daily postponed, waiting for the advent of expected suppuration. The larger lymphatic vessels by their redness and tenderness were easily traceable from the hand to the elbow, and the axillary glands were enlarged and tender. This condition lingered for weeks, causing much pain and considerable apprehension but no loss of time. Finally, instead of suppurating, the soft and pulpy condition gradually subsided. The inflamed condition of the lymphatic vessels and glands simultaneously subsided but the abnormal tissue at the seat of the injury as it became firmer in texture, also increased in quantity, until at the expiration of twenty-two months the palm of the hand was encumbered with a subcutaneous tumor about the size and shape of a common white bean. In December, 1889, I decided on its removal and not relishing the taunt that "a physician never takes his own medicine," I determined to do it myself.

As one hand only could be made available for manipulative purposes, the other being expected to maintain a very passive condition in the transaction, I set myself about devising and securing some necessary aids and appliances. For the purpose of keeping the lips of the wound properly asunder during the process of dissection I constructed from a piece of small clock spring, a spring with each end sharpened and so curved that when the ends were brought in contact and inserted between the lips of the wound, the spring was securely retained, and did its work perfectly. I drew the temper from an ordinary sewing needle of moderate size and curved it at the point to the shape of a small tenaculum. This was threaded with waxed floss silk with which it was secured to the end of my "ring finger," the extension of which was expected to produce the traction, through the tenaculum, on the tumor necessary to lift it from its bed during the process of dissection.

My only assistant was the companion who more than a quarter of a century before had promised to stand by me both in prosperity and affliction. Accordingly she seated herself in a chair in the opposite corner of my office, placed her elbows on her knees, and covered both eyes and both ears with her hands.

Thus fortified and sustained I proceeded. I first made a liberal application of a ten per cent. solution of cocaine which very soon blanched the parts. With a bistoury I laid the skin open for five-eighths of an inch and was gratified to find the cocaine had done excellent work. I then inserted the ends of the steel spring and filled the wound with cocaine but it produced no observable effect on the tissues beneath the skin.

I inserted the needle tenaculum into the tumor and waited for the fibers of the extensor digitorum communis to contract, and with a small tenotomy knife proceeded to trace out the lines junction between the normal and abnormal tissues. This proved to be decidedly more a work of necessity than of pleasure. The hemorrhage was considerable, and that, or something else caused frequent interruption and much delay, but I economized the seasons of delay in meditation. In fact most of the hour consumed was occupied in meditation. I reflected that "I had done those things which I ought not to have done, and in this particular case, that I had left undone the very thing that I ought to have done"—*cauterization*.

Time, patience, and perseverance accomplished the work. The tumor out; with a surgeon's curved needle I took one deep stitch, bringing the edges of the wound closely in apposition, and by the aid of my teeth, which are not artificial, I succeeded in tying a secure knot.

I clipped the ends of the silk, covered all with adhesive plaster, met all my regular daily engagements at the dental chair, and now after a lapse of five months the difficulty seems to have been completely removed.

DISCUSSION.

DR. DORRANCE said it was clear from the paper that all the trouble in these two cases had been caused by uncleanness. Too little attention is given to cleaning dental instruments. All instruments should be washed and disinfected in a weak solution of carbolic acid or oil of eucalyptus.

DR. J. TAFT: Instances of inoculation by careless use of operating instruments are quite common. It requires only a slight amount of septic matter to produce serious consequences if the conditions are favorable. As an evidence of this we have only to step into the laboratory of our bacteriologists and see them take upon a needle point a small amount of virus or disease germs and place it in a specially prepared medium which is kept in favorable condition for only a short time when a large growth of the germs will result. And so it is when there is a low vitality of the oral tissues that a small wound with an instrument charged with only a small amount of septic matter may produce very serious results. All instruments should be carefully washed and disinfected by dipping in a five per cent. solution of carbolic acid. There are other good disinfectants, but none so effective or less liable to injure polished instruments.

Another very disgusting habit is the use of pieces of rubber dam over and over again, as long as there is any possible chance to use it. Rubber dam is not so expensive an article as to justify such a practice in any case. Soiled napkins are also used in a similar way regardless of all sense of propriety or decency. There are many such practices that are not only indecent but possibly may do incalculable harm.

DR. DOUGLASS: I think there is more danger to be expected from using instruments employed in removing tartar from teeth,

especially in cases of pyorrhoea alveolaris. I always wash my rubber dam in a running stream of clean water and do not hesitate to use it again for another patient.

DR. BROPHY: I can heartily indorse Dr. Taft's remarks on cleanliness. I am certain that many cases of alveolar abscess have been caused by using broaches, for removing pulps, that have been used in the treatment of badly diseased teeth. It is my practice to tear my rubber dam from the piece, use it but once, then throw it away, and I do the same in regard to napkins. I use antiseptic napkins prepared by Seabury & Johnson, and when through with them throw them into the waste basket. Too much care can not be exercised in regard to cleanliness of all kinds of dental instruments.

DR. FIELD: I sometimes think cleanliness is almost a little better than Godliness. I cut my rubber dam six by nine inches, and after using it I have it carefully washed and put in an envelope with the patient's name on it, and when the patient returns for another sitting, I use the same piece again. My patients know this and appreciate it. I think it a good plan to let our patients know that we take precautions to be clean; make a little splashing when washing your hands so the patient will know you have washed them. I use my napkins over and over again—of course never the second time without washing—and like them better than new ones; they are softer and pleasanter to use. I have them washed at home, and they are thoroughly boiled in soap and water, and I believe they are as clean as though just bought out of the shop.

DR. CROUSE: I don't altogether agree with the author of the paper. I don't want to give up kissing my wife; I enjoy that. I used to begin with a piece of rubber dam a yard square. The advantage of this is that it keeps my patient warm, protects his clothes from injury, and holds itself out of my way, and the saliva can not run in over it. I wash it again and again, and each time it seems softer and more agreeable to use. I feel sure that I can wash it perfectly clean. I don't think it is necessary to deceive my patients by "splashing the water when washing my hands" or pretending to be more cleanly than I really am. I endeavor to deal honestly with every patient that comes into my office, and try to make them feel that they can trust me. I don't throw away my tumblers because some one with a dirty mouth

happens to drink out of one of them; neither do you refuse to drink at a public bar because every old toper in the country has drunk from the same glass before you. I believe that rubber dam can be as thoroughly cleansed as your china ware. I don't want to bother with a little four by six piece of rubber dam. I most certainly believe that diseases may be disseminated by filthy practices, and by using infected instruments and appliances about the mouth, but at the same time I think there is such a thing as going too far with the antiseptic notion.

DR. SCOTT, of Vicksburg: I want to make a public apology to Dr. Dorrance for criticising the use of modeling compound in taking impressions. I did not refer in particular to Dr. Dorrance; but thought there was a possibility of inoculating persons by using modelling compound that had previously been used in sore mouths for taking impressions.

DR. CORBIN was gratified that his paper had called out so much valuable discussion. He was of the opinion that the reason why so few punctured wounds were infected was that there was generally very free hemorrhage.

REDUCTION OF FRACTURE OF SUPERIOR MAXILLARY.*

BY J. C. WALTON, D.D.S., HOWELL, MICH.

THURSDAY, July 4, 1889, F. P., a farm laborer while in the field at work met with an accident, probably the kick of a horse as circumstances seem to prove. About 11 o'clock the horse made its appearance at the barn free, and friends some minutes later going back to the fields to learn the cause met him staggering toward the house. Free hemorrhage, loss of teeth, and his dazed condition indicated serious injury, and a physician was called.

The knocking out of two centrals, breaking off of right lateral, fracturing of the alveolus about the incisors and the great fracture extending back through the left superior maxilla as shown on the hard palate, nasal bone and malar suture was discovered.

* Read before the Michigan State Dental Association, at Jackson, Mich., June, 1890.

On the following Saturday two physicians and the writer in council decided that no attempt would be made to remove the fractured pieces of alveolus, but a splint was necessary for the broken jaw.

Swollen distorted features permitted us to see a little of one bloodshot eye. The face was bruised everywhere. The mouth could not be touched without eliciting a groan. Chloroform was administered, the jaws forced apart and held by the physicians with wire hooks while impressions of both jaws were taken with modelling compound. The uncut model shows well the line of fracture through the hard palate, also how the incisor end of the broken piece was up and the molar end down. The model was cut on the line of fracture, the articulation restored and the pieces fastened in position, after which the splint as shown was made of vulcanized rubber. To insure the easy passage of the splint to place the teeth on the restored model were covered with tin foil (No. 60) before packing the rubber.

The splint was placed in position Sunday morning. A piece of binding wire from an anchor screw set in the cuspid at the gum line, and another from the screw in the splint were crossed and twisted with pliers to bring the piece into position in front. The lower jaw was held firmly against the splint by a skull-cap bandage. The piece could not be forced into position at this time. The incisor end pulled into position the following day, but the molar end was never forced fully up to place, probably on account of comminuted bone.

In spite of threatened complications and alarming high temperature the patient recovered, union taking place quickly. No trouble occurred with the fractured alveolus.

Sixteen days after adjustment the splint was taken off in my office, the patient riding in seven miles for this purpose. A few days later the lower third molar was removed and the other molars ground with a corundum wheel to accommodate the molars of the fractured piece.

The root of the broken lateral has since been removed, absorption has gone on as usual with the alveolus, and except a little abscess at the bridge of the nose and hard palate no discomfort with his jaw reminds him of the time when a horse played foot-ball with his head. The patient remained from first to last in the care of his physician.

THE THIRTY-FIFTH ANNUAL MEETING OF THE MICHIGAN STATE DENTAL ASSOCIATION.

THE first session was called to order at 10:30 A.M., June 3d, in the council room of the city of Jackson by C. S. Case, the president. Rev. Geo. S. Hickey offered prayer.

Edw. Knight, Esq., then addressed the meeting, welcoming the dentists to the city and thanking the association for the honor conferred on the citizens of Jackson not only in selecting this city as the place of meeting, but also in choosing one of their number as president. He expressed the opinion that it was not only the central location of the city, but the recognized hospitality of her citizens that determined the choice of a place of meeting this year at Jackson. He then extended the hospitalities of the city, its public and private institutions as well, to the members of the association.

President Case in a few well chosen words thanked the mayor for his generous welcome. The president announced the death of Dr. C. H. Dyer, of Grand Rapids, and stated that by his death the association was left without a first vice-president. On motion Dr. E. C. Moore, of Detroit, was elected to fill the unexpired term of Dr. Dyer.

A letter was read from Dr. Louis Ottofy, of Chicago, asking that the secretary of the association be instructed to send to him a report of any matters of interest that may be brought before the association, to be referred to the chairmen of the different sections of the American Dental Association, to be reported at the next meeting. On motion this letter was referred to a special committee to investigate and report upon. Morning session adjourned.

The afternoon was given up to clinics. Dr. W. A. Dorland, of Grand Rapids, made a gold filling involving the mesial approximal side and part of the labial surface of a superior lateral incisor. Pellets of gold rolled from No. 4 foil were used, and the Snow & Lewis automatic mallet was used to pack the gold. The filling was a success and demonstrated not only the skill of the operator, but the rapidity and thoroughness of this method of using foil and the manner of packing it when skillfully done.

Dr. J. L. Gish, of Jackson, showed a rheostat of his own invention. The instrument is designed to take the electric current from the street wire used in electric lighting, and so modify it as to make it applicable for mechanical and therapeutical uses in the dental office. By means of this apparatus the current can be brought from the slightest manifestation to the full capacity of the street wire in a perfectly increased current or power without the intermediate shocks of other such devices caused by jumping the switch from one post to another. This feature makes the apparatus invaluable for therapeutical purposes, as it renders the application of electricity to the living tissue almost painless and at the same time sufficient power can be secured for the accomplishment of any desired effect. In fact this appliance puts a most valuable agent at the service of the dentists.

Dr. C. S. Case demonstrated his method of making the "Angle system" of regulating appliances and illustrated several cases of practical application. The doctor used German silver plate and wire and illustrated the method used in making the tubing and screws. A piece of plate is cut of sufficient width to make the required size tubing when the edges have been turned up together. This is accomplished by drawing it through a wire draw-plate, beginning in the larger holes and passing it successively through the smaller ones until the proper size is reached. The tubing may be soldered or not as the case may require. The doctor, instead of using a vise to hold his draw-plate, had two iron straps bent to the triangular shape and fastened to his work bench with strong screws. The draw-plate is placed inside of these irons and held against the base by a wooden pin. The advantage of this device being that the top of the plate is held firmly in place as well as the bottom and free access is obtained for the drawing tongs.

The screws are made with an ordinary screw plate; the nuts are cut from five cent nickels. A variety of appliances were shown which cannot be described intelligently without drawings. But a great variety of independent or concerted movements may be had by this form of apparatus. Every case will suggest some variety of the pull or push movement that can be easily accomplished by some variety of this system. The teeth are banded in almost every case so that there is no mutilation of the teeth. The apparatus is easily made by any dentist of mechanical skill.

The results secured by Dr. Case and the great saving of time commend the system to all who value time and the comfort of their patients.

EVENING SESSION.

Meeting called to order at 8:30 P. M. Minutes of previous meeting read and approved. Dr. C. S. Case, of Jackson, the president of the association, read his annual address. See page 297 of this number.

On motion the president appointed Drs. Dorrance, Owen and Wood a committee to prepare suitable resolutions on the death of Dr. C. H. Dyer.

Dr. Case thanked the association for the hearty endorsement given his address, and declared the next order of business to be the reading of a paper by Dr. L. D. Wood, of Grand Rapids, entitled, "The Consideration of Dental Patents." Page 310.

After the reading of this paper the association adjourned to 9 A. M. Wednesday.

WEDNESDAY MORNING SESSION.

Meeting called to order at 10 A. M. by President Case. Minutes of previous meeting read and approved. On motion of Dr. Harroun all visiting members from outside of the State were allowed the privilege of the floor in discussions.

Being favorably reported by the Board of Censors, the following persons were elected members of the association: W. L. Williams, M. D. Vanderberg, F. H. Essig, L. P. Hall, E. L. Dillman, L. C. Smith, B. R. Furgeson, H. C. Raymond.

The secretary read a circular letter that had been sent out as an advertising circular by Dr. L. L. Davis, of Detroit, in which he used a letter from the secretary of the dental section of the Ninth International Medical Congress, asking him to give a clinic in operative dentistry at the meeting in Washington, to call attention to superior ability as an operative dentist.

On motion the matter was referred to the Board of Directors for action.

Dr. G. E. Corbin read a paper entitled, "A Case in Hand." Page 325.

After the reading of Dr. Corbin's paper, the association adjourned until 2 P. M.

WEDNESDAY, 2 P. M.

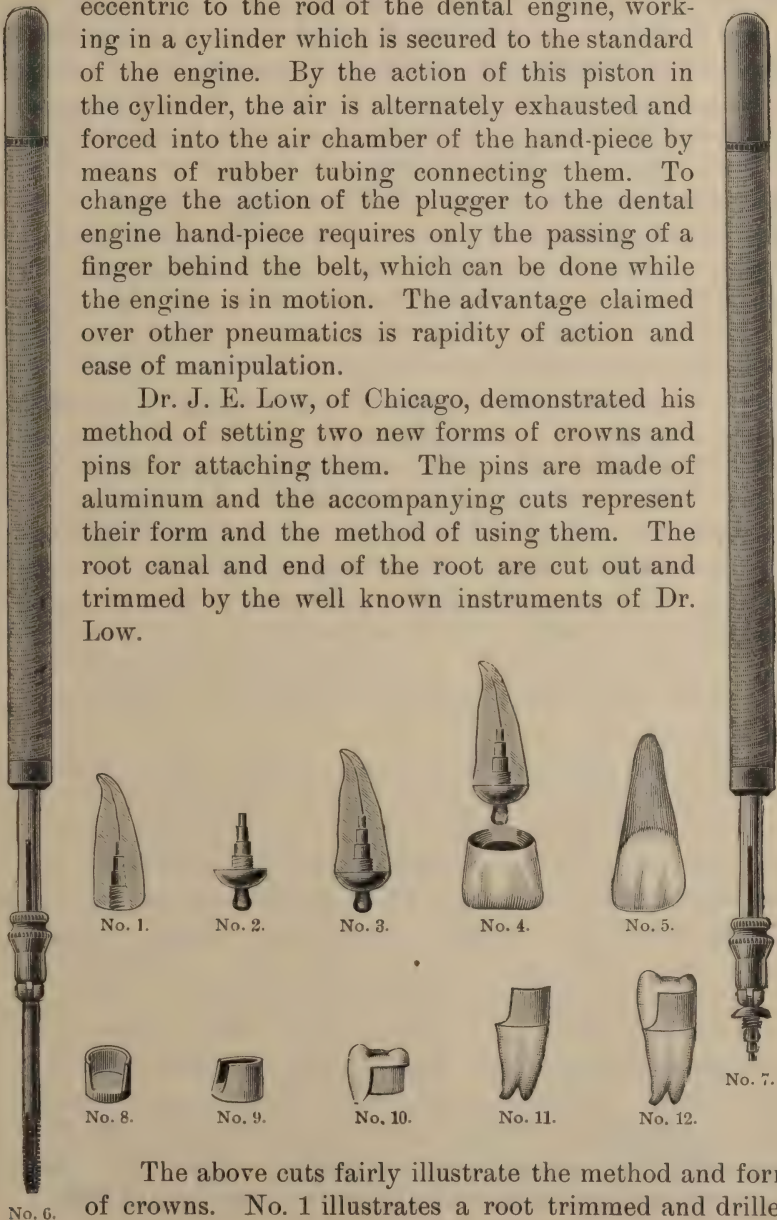
The afternoon was given up to clinics.

Dr. W. B. Ames, of Chicago, showed a method of manipulating copper amalgam. He takes his extra dry amalgam and holding a piece with the foil carries in the flame of the lamp until the slight bubbles of mercury appear on the surface, it is then put in a wedgewood mortar and crushed to a dry powder; then add nitrate of mercury and triturate until the mass becomes pasty and of proper condition to use in filling; wash to remove acid and proceed to use in filling. The doctor prefers to heat the amalgam in the pliers rather than the iron spoon for the reason that it is more uniformly heated. The nitrate of mercury is made by the action of dilute nitric acid—1 part acid and 5 parts water—on mercury. The mercury is put into the bottle and the acid poured over it and allowed to stand several days until no bubbles are seen to rise in the fluid from the action on the mercury. The claim is that the nitrate of mercury when triturated in the mortar with the powdered amalgam, gives up sufficient of its mercury to render the powder plastic and suitable for inserting into the tooth, and in this way only so much mercury as is necessary is used. Dr. Ames also claims that there will be no wasting away of copper amalgam if prepared in this manner.

Dr. Case, of Jackson, demonstrated a method of swedging caps for all gold crowns and caps for bridge teeth. The method is to imbed a natural tooth in a section of gas pipe about an inch long and three-fourths of an inch in diameter, with moldine or plaster-of-Paris so that only the crown surface and so much of the lateral surfaces as may be desirable are exposed; a piece of rubber tubing is then placed over the cylinder containing the tooth so that it extends one-half inch, or higher if desired, above the crown; into this is poured Babbitt's metal or any fusible alloy that is sufficiently hard to endure the swedging without changing form. This secures a matrix mould of the natural crown. To swedge the gold cap a piece of gold of required size and thickness is laid over this matrix and driven into it by a piece of lead. The method is very similar to swedging caps on the ordinary die plate, but it has the advantage of securing any sized cap that may be needed and a greater variety of shapes. Of course it involves keeping near at hand a large assortment of teeth with which the matrix may be made.

Dr. B. S. Palmer, of Chicago, exhibited a pneumatic mallet, which is attached to and operated by the motive power of the dental engine. The action is secured by a piston attached by an eccentric to the rod of the dental engine, working in a cylinder which is secured to the standard of the engine. By the action of this piston in the cylinder, the air is alternately exhausted and forced into the air chamber of the hand-piece by means of rubber tubing connecting them. To change the action of the plugger to the dental engine hand-piece requires only the passing of a finger behind the belt, which can be done while the engine is in motion. The advantage claimed over other pneumatics is rapidity of action and ease of manipulation.

Dr. J. E. Low, of Chicago, demonstrated his method of setting two new forms of crowns and pins for attaching them. The pins are made of aluminum and the accompanying cuts represent their form and the method of using them. The root canal and end of the root are cut out and trimmed by the well known instruments of Dr. Low.



The above cuts fairly illustrate the method and form of crowns. No. 1 illustrates a root trimmed and drilled

out with Low root trimmer and a thread cut in the upper part with a screw top illustrated in No. 6. No. 2 illustrates the post or dowel pin, which is made of aluminum of different sizes to suit different sized roots. They are also made of platinum for cases where it is desirable to solder on a crown. No. 3 illustrates the post screwed into place by means of the carrier, No. 7. Cement or gutta-percha can be used to seal the joint. No. 4 illustrates the crown and the manner of its attachment. The crown is concaved to fit the cap and is attached by means of cement. No. 5 represents a completed operation. The advantages claimed are durability as compared with other crowns of this class; easily and quickly applied, natural appearance and inexpensiveness. The apparent weak point in this crown is the cement joint between the post and porcelain crown, but the close adaptation and the mechanical construction are such as to make a strong and durable joint. Cuts Nos. 8 and 9 represent a gold socket to be attached in any way desired by the operator to bicuspid and molar roots. It can be soldered to a pin, attached by a collar or screw and cement. Cut No. 10 represents a porcelain crown that is set into this socket by cement. Cuts Nos. 11 and 12 illustrate them further. The advantage of this crown is that an all porcelain front is secured with a strong backing of gold, little or none of which is visible on the outside. This is particularly a valuable crown for use in making bridge-work, as in case of an accident a new crown can readily be inserted without removing the bridge from the mouth.

Dr. Case illustrated with models a new method of making a cast with Watt's metal and rubber attachment, for lower dentures. The plaster cast with the teeth ground and waxed into position, as for an ordinary rubber case, is invested in one side of a Watt's metal flask. The upper section of a rubber flask is then placed on this and poured full of plaster. After the plaster has set the section of the rubber flask is parted from the Watt's metal section bringing with it the teeth, but leaving the wax that had held them in position in the Watt's metal section. This wax is then carved so as to make a mould for the cast metal plate. The upper section of the Watt's metal flask is then placed in position and filled with plaster. When set, the flask is separated, wax removed, dried and poured. This metal plate is then trimmed and placed in the rubber flask on the teeth; its

place will easily be determined, as the impression of the wax base plate will be indicated in the plaster. The other side of the rubber flask is then placed over this and filled with plaster. After the plaster has set the flask is opened, packed with rubber and vulcanized as any ordinary rubber case.

Dr. E. C. MOORE, of Detroit, showed a device for holding operating instruments, in the drawers of the bracket or cabinet case. The device consists of two metal plates, which have been stamped out with a die into grooves, so that when two of the plates are fastened together with rivets, the grooves form a separate compartment large enough to contain a single instrument. This holder is held in place in the drawer by a screw passed through each side of the drawer into a holder where it fits so loosely as to permit the holder to be placed in any position desirable. The drawer has no bottom, and when it is pulled out of the case or bracket the holder immediately assumes a vertical position. One hand only is required to place the instrument and holder in a horizontal position and to shove the drawer into the table. As many of these holders as the depth of the drawer will contain can be put into each drawer. Two holders can be placed in the ordinary drawers of an Allan table, each holder containing from nine to twelve instruments. This device provides for such a classification of instruments as will be appreciated by every busy and methodical operator.

Dr. KNAPP, of Jackson, showed a device for holding the rubber dam out of the way, and napkins in place in operations about the mouth; it also supported a magnifying glass and a reflector. The apparatus consists of a metallic plate swedged to fit the chin, and held in place by a strap passing around the head. The mouth mirror, or reflector, and magnifying glass are each supported by an arm consisting of a series of ball and socket joints attached to the face plate, permitting easy adjustment to any desired position.

WEDNESDAY EVENING SESSION.

Meeting called to order at 8:30 P. M. Minutes of previous meeting read and approved.

Dr. Dorrance, for the committee, read the following report upon the death of Dr. Dyer:

WHEREAS, Since the last meeting of this association our

brother and Vice-President, Dr. C. H. Dyer, has been called away from the busy scenes of earth, and his activities in the dental profession have ceased forever; therefore, be it

Resolved, That this association desires to express the sense of loss it feels in his early demise, not only as an active member of the association and profession, but as a citizen, acquaintance and friend. For many years past Dr. Dyer has been actively identified with the progressive spirit of our vocation, and by careful study and constant endeavor to be as good as the best, he had become one of our foremost operators, and thoroughly posted in his calling. Last year when the association met in the second city his efforts were untiring to make the meeting a success, and render our visit one of pleasure as well as profit. His social qualities were of the highest order, a fact which has given him a host of warm friends and genial companions. And be it further

Resolved, that a copy of this resolution be incorporated in the minutes of this meeting of the association, and a copy also be sent to the family of the deceased brother, and to the journals for publication.

Signed,

W. H. DORRANCE,

L. D. WOOD,

F. S. OWEN.

The resolution was adopted by a rising vote.

The president declared the next order of business to be the discussion of Dr. Corbin's paper.

DR. J. C. WALTON, of Howell, read a paper on "Reduction of Fracture of Superior Maxillary." Page 331.

DR. E. J. WAYE, of Sandusky, O., read a paper on "Does our Profession, as Practised at the Present Time, Confer on the Community all the Benefits it Should? If not, Why?"

Owing to the lateness of the hour these papers were passed without discussion. On motion, half past one o'clock Thursday was set apart for a visit to the State Prison.

DR. CROUSE said he wanted to thank the association for the hearty manner in which it had received him. He had received twenty-five men members since he came, and he thought Michigan would redeem herself. He wished the association would appoint three good, live men to assist him in the work of the Dental Protective Association in this State.

DR. TAFT asked that the papers that had been read before

the association be published in the *Dental Register* and OHIO JOURNAL OF DENTAL SCIENCE, together with a report of the discussions that were being made for these journals.

THURSDAY MORNING, JUNE 5TH.

Association call to order at 8:30 A. M.

The Board of Directors, through President Case, reported that they had examined into the matters of Dr. L. L. Davis, who was charged with a violation of the code of ethics, and found that he was guilty, but recommended that the society deal leniently with him because of his previous good standing in the profession, and that there are circumstances which mitigate the offence.

Dr. Davis was asked for a statement of his side of the case, which he gave, and said he was sorry the the thing had ever occurred, and he did not think he would ever do such a thing again.

After considerable discussion on both sides Dr. Davis was asked if he was willing to say that he had violated the code of ethics of the Michigan Dental Association and was sorry for it, and if forgiven would promise never to do so again. He would not subscribe to such a definite statement, and by vote of the association he was suspended one year.

Dr. J. WARD HOUSE, of Grand Rapids, read a paper on "Dental Ethics from the Standpoint of a Young Practitioner."

Dr. GEORGE L. FIELD, of Detroit, read a paper on "The Treatment of Second Stage of Alveolar Abscess."

Dr. E. C. MOORE, of Detroit, read a paper on "Treatment of Third, or Chronic State of Alveolar Abscess."

For lack of time these papers were passed without discussion.

The following officers were elected for the ensuing year : President, H. K. Lathrop ; 1st Vice-President, H. C. Corns ; 2nd Vice-President, F. S. Owen ; Secretary, J. Ward House ; Treasurer, Geo. H. Mosher ; Board of Censors, J. L. Gish.

By a unanimous vote it was decided to hold the next meeting the third Tuesday in August, 1891, at the Sault Ste Marie.

On the recommendation of the Publication Committee the papers read before the Society were ordered to be given to the *Dental Register* and the OHIO JOURNAL OF DENTAL SCIENCE for publication with a report of the proceedings.

On motion adjourned to 3 P. M.

Meeting called to order at 3:30 P. M., after a very interesting visit to the State Prison where Warden Hatch received the association cordially, and after visiting the workshops and seeing the men at work, addressed them on the subject of prison reform. The address was exceedingly interesting and all felt that the State of Michigan was exceedingly fortunate in having so excellent a man at the head of this great institution. A rousing vote of thanks was cheerfully given Mr. Hatch for his courtesy.

A vote of thanks was extended to Mr. D. C. Meseroll, of Jackson, for the beautiful programmes he furnished the association. A vote of thanks was also given to the common council of Jackson, for the use of their Council Chamber.

On motion, twenty-five dollars was ordered to be paid to the secretary for services rendered. On motion, N. S. Hoff, of Ann Arbor, G. E. Sanders, of Saginaw, and L. D. Wood, of Grand Rapids, were appointed a committee to solicit members for the Dental Protective Association.

The Board of Directors reported the following bills of expense which were ordered paid: To the janitor, \$6.00; The Citizens Printing House, \$15.30; John L. Gish, \$13.59; George H. Mosher, \$12.00; Wm. Cleland, \$3.00.

The treasurer made the following report, which was received and adopted:

Balance on hand from 1889,	-	-	\$104.45
Received at present session,	-	-	150.00
			<hr/>
Total,	-	-	\$254.45
Disbursements present session,	-	-	45.89
			<hr/>
Balance on hand,	-	-	\$208.56

The president appointed Dr. E. C. Moore, of Detroit, a member of the Executive Committee; Drs. E. H. Conway and W. L. Williams, of Sault Ste Marie, as Local Committee of Arrangements; Drs. C. S. Case, Wm. Cleland, and J. Ward House, as Publication Committee; Dr. Geo. L. Field, University Visiting Committee.

On motion, adjourned.

[As our limited space will not allow the publishing of all the papers read before the Michigan Society in this issue of the JOURNAL, the remaining papers will appear in the August number.—ED.]

TO CORRESPONDENTS.

WE are obliged to hold over many original contributions on account of Michigan State Dental Society transactions appearing in this issue, but the articles will be published at as early a date as possible.

Societies.

"Wherewith one may edify another."

AMERICAN DENTAL ASSOCIATION.

THE thirtieth annual session of the American Dental Association will meet at Excelsior Springs, Missouri, commencing Tuesday, August 5, 1890, at 10 o'clock A. M.

GEO. H. CUSHING, *Rec. Sec'y.*

MEETING OF THE AMERICAN DENTAL ASSOCIATION.

THE railroad arrangements are not all completed, but enough is known to assure at least the usual reduction of one and a third fare, on certificate plan, by all the different passenger associations.

Arrangements are being made for a special train, from Chicago, which will leave here Sunday afternoon and reach Excelsior Springs Monday morning. This will give the entire day, Monday, for the different sections to complete their reports.

All parties wishing to go on this special train will confer a favor by letting us know at once so that we may know how many to arrange for. Just what rate will be secured for the round trip is not definitely settled, but we expect a low one. A notice will be issued later giving exact time of starting and route selected.

Applications have been made for reduced rates for the four associations, The American Dental Association, College Faculty Association, National Board of Dental Examiners, and the Dental Protective Association. We are trying to get this rate good for

ten days so that we need not adjourn before everything is finished.

Parties purchasing tickets should be sure to get receipt, showing that they have paid full fare going, this will enable them to get return ticket for one-third regular fare.

J. N. CROUSE,

2231 PRAIRIE AVE., CHICAGO.

Chr. Ex. Com.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

THE next meeting of the National Association of Dental Examiners will be held in Excelsior Springs, Mo., on Monday evening, August 4th, at eight o'clock, and at other times during the week, between the sessions of the American Dental Association. It is important to have every State Board represented.

FRED. A. LEVY, D.D.S., *Secretary*.

NORTHERN OHIO DENTAL SOCIETY.

THE Northern Ohio Dental Society holds its next annual meeting at Oberlin, in May, 1891.

Our Aftermath.

DIED—OLDHAM.—Anna Townley, wife of Dr. Jay L. Oldham, New York City, Friday, May 9, 1890.

DIED—ATKINSON.—On Saturday, May 31st, of pneumonia, after an illness of five weeks, Clinton Atkinson, M. D., of College of Physicians and Surgeons, N. Y., eldest son of Dr. W. H. Atkinson.

A NEW WAY TO COLLECT OLD DEBTS.—A well-known dentist tried hard to collect a bill, but after many ineffectual efforts said to the debtor: "I do not intend to send you any more bills, and I don't intend to sue you; but there is one thing I want to tell you. Every time you cut off a piece of beef-steak and pass it to your wife, I want you to remember that she is not chewing that beef with her teeth, nor with your teeth, but with my teeth." In two or three days he received a check. The motion of those doubly false teeth in his wife's mouth was too much for the husband.—*Christian Advocate*.

THE
OHIO JOURNAL
—OF—
DENTAL SCIENCE.

VOL. X.

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No. 8.

Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

DOES OUR PROFESSION AS PRACTICED AT THE
PRESENT TIME, CONFER UPON COMMUNITY
ALL THE BENEFITS WHICH IT SHOULD?
IF NOT, WHY; AND WHAT IS THE
REMEDY?*

BY E. J. WAYE, D.D.S., SANDUSKY, O.

A SOMEWHAT extended experience as a dentist, during which I have had frequent opportunities for conversation with "all sorts and conditions of people," has convinced me that upon no other subject which in any degree approaches it in importance, a knowledge of which so intimately concerns every individual in the community, does there exist so universal, so deplorable an ignorance as to-day exists concerning the teeth. This ignorance is confined to no grade or condition, it is found everywhere and differs only in degree. From the lowly hut of the laborer, whose daily toil can scarcely provide for those dependent upon him the plainest fare and coarsest clothing, to the palatial dwellings of the rich, the refined, the educated and the fastidious, ignorance concerning the teeth is the rule, and knowledge the exception.

* Read before the Michigan State Dental Association, at Jackson, June, 1890.

This general condition of ignorance does not refer particularly to the care and attention which should be bestowed upon the teeth. Though even here we have by no means reached the highest cultivation. Neither is it the entire community to which attention is directed at this time, but rather to a class which exists in every community. It is not a *general* ignorance concerning the teeth and their care to which we now refer, but rather an ignorance concerning certain phases of their existence, during which the teeth are wholly under the care and supervision of this class, and through whose ignorance, and the neglect resulting therefrom by which their disease decay, and loss to an extent most deplorable, is the inevitable result, and this before the age at which the services of the dentist are deemed necessary.

The victims of this ignorance are the children. The injury inflicted occurs during childhood. And the almost wholly innocent and ignorant cause, of what to the children is a life-long deprivation an irreparable injury is, the mothers. This is certainly a most grave and solemn indictment. And what to me seems the most sad and lamentable feature in the case is that unless my observation for years is most egregiously at fault, the charge is altogether demonstratable.

In holding this opinion do not for one moment believe me capable of believing that the mother either knowingly, or willingly, would permit what she believed to be an injury to her child. It is this very unconsciousness of danger in which lurks the peril, and it is ignorance which accounts for the lack of consciousness.

In the life of every child occurs two most important epochs in each of which certain mysterious processes are carried forward to completion. The first of these occurs in infancy. Its first visible appearance being about the fifth month, and it continues usually through the second year, at the end of which the little mouth is filled with the temporary set of twenty teeth. This is known as first dentition. This period of two years is one which, to the mother, is fraught with much anxiety and apprehension. It is not unfrequently attended with violent symptoms, which sometimes result fatally, and when safely passed, and the little semi-circle of pearls in position, the joy of the mother knows no bounds. She may now rest in peace, her nightly vigils ended, and the grim spectre which for long weary months has haunted

her dreams is now at rest, and peace and happiness at length resume their supremacy.

Then comes the period of second dentition. Of this the mother knows but little beyond the fact that there are two sets of teeth. That the first of temporary teeth will be shed, and a second and larger set will take their places. As this process does not begin in a long time, is attended with no danger and but little inconvenience, all anxiety concerning it may be deferred till such time as there is a reason for it.

As I am now talking to dentists no account of what occurs between this period and the first visit to the dentist will be given, but instead, an imaginary visit of the mother to the dentist will, I think, better serve to illustrate the ignorance of the one and its results upon the others. Under ordinary circumstances no particular trouble may have been experienced with the teeth up to the tenth or twelfth year. At this age many of the temporary teeth have disappeared and been replaced by those of the permanent set. The sixth year permanent molars are in position and quite probably those of the twelfth year also.

The mother whom we will suppose to belong to that respectable class educated in our common schools, one who reads the papers and books, and possess a full average amount of intelligence and general knowledge of every day affairs, enters the office of the dentist with her two children, one of them nine, and the other thirteen years of age. "Doctor, my little girl has been having the toothache." "Ah!" "Yes, in two of her first teeth." (Emphasis on "first.") You seat her in the chair and proceed to make an examination, which shows the aching teeth to be two of the sixth year molars. One in the upper, and on the opposite side one in the lower jaw. You find decay, a good deal of it, crown approximal cavities in both, the teeth much broken down, the pulps exposed, and such a condition of things in the mouth as clearly indicates an utter disregard of cleanliness or attention of any kind. Food in all stages of decomposition is around and between the teeth, and under the free edges of the gums.

"Those are the first teeth are they not, Doctor?" "Yes, madam, and last as well unless supplied by the dentist." "Won't she get new ones if these are extracted?" "No, madam, these teeth erupt but once, they are the first permanent grinding teeth, or molars, as dentists term them." "Why, these are the first

teeth, I am sure they have never been shed." "Very true, and as I said they are also the last teeth the child will ever have in that place." "Well, now I thought all the teeth were shed. What can you do for them?" Each one can answer that question as his own ideas of similar cases may prompt, but I incline to the opinion that most of us will think that those two most important and valuable teeth will be lost ere long.

Her boy age thirteen, has also been a sufferer from toothache, and in his case it is not only two of the sixth year molars, but those of the twelfth year also, which have recently made their appearance, the pulp of one of them being exposed, and another decaying. Two of the sixth year molars are too much broken down to admit of being filled successfully. The mother looks on during the examination, listens to the diagnosis, and such remarks concerning the injury which the loss of these important organs is certain to entail upon her children (and should her dentist be an earnest, conscientious man, and not too much hurried with work), possibly also a brief sketch of the process of dentition, with a few kindly words as to the duty of the mother in the case.

And then in a voice in which sorrow seems blended with accusation, she exclaims: "But, Doctor, I knew nothing of all these things; my mother taught me nothing whatever concerning my teeth. Probably knew nothing herself. Do you wonder that my children's teeth were neglected? I was ignorant, and who was there to teach me?"

Perhaps no dentist present has heard from the lips of any dentist, either a confession like the above, or the interrogatory which followed. But that all have had presented for their inspection mouths, in which existed conditions similar to the ones described, perhaps none will deny; mouths in which the teeth themselves afforded evidence irrefragable of total neglect. And if neither the confession nor the question has been elicited, it was not because of any superior knowledge which might render such teaching necessary, but rather, of an indifference born of ignorance, which prevented her from bestowing upon the subject any proper consideration, or of a neglect the most culpable and inexcusable.

Through the period of infancy and childhood almost the entire care and management of the teeth is intrusted to the

mother, and whatever attention they may receive is the result of her supervision. Now if the mother has so little knowledge of second dentition as to mistake the molars of the permanent set for the temporary teeth, which so far as my observation and experience goes is almost universally the case, and thus these priceless teeth through neglect become so diseased and decayed as when first seen by the dentist to be past preservation, upon whom rests the responsibility?

If the dentist, who beyond every other individual possesses that knowledge, a part of which should be imparted to the mother, the results of whose ignorance he witnesses daily, shall stand listlessly by, making no effort for its alleviation, upon whom shall she depend for that light and knowledge, the lack of which is now working injury to her child?

With you is the answer. I, of course, have my own ideas, but having already too long trespassed upon your kind indulgence, I will leave for others its future consideration.

DENTAL ETHICS—FROM THE STANDPOINT OF A YOUNG PRACTITIONER.*

BY DR. J. WARD HOUSE, GRAND RAPIDS, MICH.

It is with a feeling of timidity that I come before you to present a paper on a subject which has been in the past, and is to-day, occupying a place foremost in our dental literature.

Timidity because, being a young practitioner myself, it is natural that I should feel incapable of profitably addressing the older members of the profession.

Since my subject is discussed from the standpoint of a young practitioner, however, the paper could not be presented consistently by one old in the profession. And, moreover, it is possible that a brief consideration of the subject from this standpoint may not be wholly without value to the older practitioners.

Ethics defined in its broadest sense is the science of human duty, including a body of rules drawn from this science. It is applied as well to a body of rules of practice in respect to a single class of human actions, such as social, political, or dental ethics.

* Read before the Michigan State Dental Association, at Jackson, Mich., June, 1890.

From these general statements, then, are we able to formulate a definition of the subject before us.

Dental ethics is a body of rules (relating to dental practice and that pertaining to it) drawn from the science of human duty.

The task before us now is to formulate this body of rules from our point of view, and in so doing we hope to provoke a discussion, out of which a better code may come. Even though the discussion be sufficiently heated to reduce our paper to ashes, we shall not regret it, for out of its ashes we trust that phoenix like, there shall rise that which is far more enduring.

The ethical relation of practitioner to patient.—Although it is our intention to keep clearly defined the distinction between our subject and the legal aspect, we deem it well to give a brief summary of the legal side as discussed most ably in one of our leading journals.*

"A dentist like any one else who offers his services to the public, *generally* for employment in a professional capacity, contracts with his employer; first, that he possesses a reasonable and ordinary degree of skill and learning; and, second, that he will use a reasonable and ordinary degree of care and diligence in the exercise of his skill and in the application of his learning to accomplish the purpose for which he is employed."

And further is it stated that, "Where the result desired, as the cure in the case before us, depends both upon the skill in the use of means and the influences of other causes, the law raises no such implied engagement it regards the undertaking to be only for the use of proper means. The retainer of a lawyer obliges him to the right conduct of the suit, but not for the judgment of the court, for that is beyond his control. The retainer of a physician obliges him to the employment of ordinary medical skill in the treatment of the patient, the cure is not with him. The surgeon called to attend a patient with a broken or dislocated limb, impliedly engages the ordinary skill of his profession adjusting it; he is not supposed to engage to cure or to insure a recovery."

Moreover do we find clearly brought out from the discussions of judges and juries in cases cited, the fact that, first, the dentist is not allowed to use the most approved means or be skilled in the more difficult applications of the advanced research

* Daniel Nason—*Dentographic Journal*, October, 1887.

in the profession. The law holds him simply to the lowest degree of knowledge that will admit one to practice; secondly, that any negligence on the part of the patient is sufficient to counteract the lack of skill on the part of the practitioner; and lastly, that in no case is the practitioner required to make use of especial adaptation of skill on his own part or that of others.

Here we have the legal side of the case, and we shall venture to treat the *ethical* side as beginning where the legal ends.

Let us assert first of all, that the young practitioner who starts out with his aim no higher than that required to satisfy the law, will soon prove himself of but little value to the profession and the profession of but little value to him.

The ethical relation of practitioner to patient is based upon the determination of the practitioner to render to the patient full value of honest, conscientious service for the compensation asked. If he has been conscientious from the beginning he will have first asked himself the question: "Am I so constituted and have I such ability that I can take up this profession and render valuable service to my patients." This point once settled he should further conclude that, "it is my next duty to seek such instruction as will develop such ability most perfectly." Now located in his office let him keep ever in mind his duty to those he proposes to serve, rather than the idea that each blow with the mallet will place so many cents to his credit. He should remember, too, that the "golden rule" is as valuable in the ethical treatment of his patients as the "golden foil" in the dental treatment. We will now assume that every young practitioner has carried out what we have laid down for him, but that he has also a strong desire to make known his good works to the world. Here let me insist on the fact that his good works are much nearer the brains of the people when put into their mouths than when put in the newspapers. "The best advertisement is a pleased patron."

Ethical relation of practitioner to practitioner.—Upon this subject there is to legal side to state. The law is unwritten other than the relation of man to man. But on the ethical side there is much that I feel should be written if not elsewhere, upon the tablets of our memories.

Let me introduce the first point that I wish to make under this head with an illustration. In a certain prosperous city of a

population of one hundred thousand inhabitants, we will assume there are twenty dentists in active practice. In the morning paper the dentist read the card of J. M. Jones, D.D.S., office at No. 140, "Pleased to have you call" sheet. Dr. Smith, one of the most prominent of the twenty dentists mentioned above, on going to his office that morning drives out of his way sufficiently to pass Dr. Jones' office, drops in, finds a bright young man with office of a type to commend itself to patients and fellow practitioner, and the young doctor in keeping with his office. Dr. Smith learns that Dr. Jones is a graduate of the very reputable college of G——. After a social call he leaves for his office. During the month that follows he learns from the Dean of the college of G—— that the young dentist in question is in every way worthy of a hearty reception into the profession. During the following years that the young practitioner must learn to wait as well as labor Dr. Smith shows to him every social and professional courtesy that is possible to a fellow worker. What can we say of the remaining nineteen members of the profession, with equal effort do they tend to our young practitioner, the conventional "cold shoulder." Has Dr. Smith the correct ethics in the case or have the select nineteen? This question I need not answer for you.

Let me illustrate again. Mrs. X., a patient of Dr. A., enters the office of Dr. B. "Good morning, Dr. B.; Dr. A. has done my work for some time, but the last filling he put in dropped right out in just a little while, and his other work begins to hurt me and I don't think it good, and he is getting so that he charges ever so much when he does just a little work and Mrs. Y. says it just the same way with her work, and Mrs. Z. recommended that we come to you," she exclaims all in a single breath.

"Good morning," returns Dr. B. "I fear you have not been wholly just to Dr. A., but if you will kindly take the chair I will look over your work. Now Mrs. X. surely you have some very good work; I see you have lost the filling from this molar, but I have no doubt that the blame does not rest with Dr. A. The dentist is obliged to acknowledge that failure at times is possible for him as for those in other walks of life. Dr. A. is certainly entitled to the credit of having done some very good work for you."

On the same morning in another part of the city a second

Mrs. X., a patient of Dr. C., enters the office of Dr. D. with sentiments similar to those of her sister across the river. Does she meet with like treatment from Dr. D.? "Good morning, Mrs. X.," he returns. "If you will take my chair I will look over your work. Now, Mrs. X.," he continues, "it is a shame you should have been swindled in this manner. This work is a disgrace to the profession, and the charges are excessive."

The work I have assumed to be similar in the two cases cited. Again I ask, has Dr. B. or Dr. D. the right ethics in the case? And again may I say this question I need not answer for you.

I will not illustrate this part of my subject further. I wish, however, to close it with the statement that he who is governed by our "Code of Ethics," will serve the patient of the absent or ill fellow practitioner without seeking to steal his patient from him.

Ethical relation of practitioner to the profession.—It will be disputed by none we think, that of all the professions there is not one for which more rapid progress can be claimed than for the one we represent. The question naturally arises, to whom is the credit for this progress due. I venture with boldness to assert that a code of ethics not far different from that we have endeavored to present in our imperfect way to you, has been no small factor in the problem. *From whence comes progress in any profession or avocation in life?* I answer without fear of contradiction, that it comes only through conscientious, earnest toil, through a sacrifice of time and money on the part of him who is endowed not only with ability, but also with a love for the cause he represents that transcends the love of mere personal gain.

From the standpoint of the young practitioner, I declare most emphatically that my love for the profession and my faith in the code of ethics that has governed our association, is such that I prefer to take my stand with the practitioner who seeks to advertise his works by means of patient labor, rather than with the practitioner who seeks as his means the advertising in our daily papers—objectionable cuts showing the agony suffered by the prevalent method and the pleasure resulting from the advertiser's way of operating and which if harbored by us would result in a few years to the profession resorting to more disgusting means—may be like this: The dentist would have photos taken of himself and advertise "One of these beautiful chromos

given away with every gold filling." In conclusion let me say, that as intelligent men, men having the interest of the profession at heart, should we allow ourselves to be brought to the level of the advertiser, or should we with greater earnestness in our work try to bring them to our standard. I think we will all agree on the latter. How can this be best accomplished? Let me offer a few suggestions.

In the first place let our dental schools and colleges and examining boards, be more particular and set the example. Let the younger members of the profession, if qualified, receive the endorsement and good wishes of the older members. Let there be more familiarity among the dentists. Let each one show by word and action, fidelity to our "Code of Ethics."

And lastly, let each one, strive to make our annual meetings a success and our local societies more numerous.

TREATMENT OF SECOND STAGE OF ALVEOLAR ABSCESS.*

BY GEO. L. FIELD, D.D.S., DETROIT, MICH.

SOME few weeks since I was quietly, but most *emphatically* informed by the presiding officer of this association, that I had been selected, elected, set apart, or whatever you may choose to call it, to write a paper upon "The Second Stage and Treatment of Alveolar Abscess," and I, in quite as emphatic a manner replied, that for many reasons, too numerous to mention, I could not comply with the mandate issued. The want of time was the principal objection then in my mind, but there was one other, probably quite as strong, the fact that I was quite positive that I had nothing new to offer in this field of dental science. As I felt that the subject of "alveolar abscess" had been so thoroughly gone over time and time again, discussed in our meetings, and spread upon paper for general circulation by those who carried wiser heads upon their shoulders than the one I had been "toting" upon mine for the last half century, that it seemed a foolish, if not reckless, task, for me to attempt to say more. But a second attack upon my battlements made by this same persist-

* Read before the Michigan State Dental Association, at Jackson, Mich., June, 1890.

ent officer soon followed. He said so many pretty things to me, so gently and deftly smoothed down the feathers that I felt begin to stick up in every direction as he kept getting in his work upon my defenses, intimating that I was one of the "*old stagers*" whom the "*boys*" would like to hear peep a last peep or two, as I gently but surely drifted into that stage of life known as the "sere and yellow leaf," that I began to melt, all these pretty words and pleasant blandishments I must admit had their weight, and I said to myself, well, anything to oblige Benson. Then I sat down to think over my theme, "The Second Stage of Alveolar Abscess and its Treatment." And I am free to admit that the more I thought the matter over, the less I could find to say. I wondered where my predecessor (No. 1) on the subject of alveolar abscess was going to end his *first* 3rd of this trinity, and where I was expected to leave it for the closing arguments of No. 3 before the court.

Alveolar abscess I have always looked upon as an effort upon the part of nature to re-establish a once normal condition. And there is one thing that should never be lost sight of, and that is, that the physician *cures* nothing, he can no more *cure* a disease than he can create a blade of grass; he may remove certain obstructions or administer certain stimulants and drugs that may *assist* nature in *her* efforts to reassert a lost supremacy, but beyond that he cannot go. Life is a normal, death an *abnormal* condition. Alveolar abscess, as we all know, is the result of death, the death of the pulp of a tooth, and nature's effort to remove that which has become an irritating cause of disturbance, the dead, or partially dead tooth, the first stages being congestion and inflammation in which stage by proper assistance to nature, further trouble may be avoided, and the abscessed stage never reached, but as these stages are not now under discussion they have no place here. What No. 1 of this alveolar abscess trinity has written upon the first treatment of the disease under consideration, to be read here, of course I do not know; but I will take it for granted that he has opened up well the fistulous opening (that is, providing there is one), punctured the foramen, providing it was not already large enough, that he may have gotten a free circulation down through the root canal, to, and through the drainage tube that nature has already tunnelled out through the process; from through the same, or a similar coaxing and per-

suasive process that the president of this association went through to draw out these few desultorious remarks from me. The case may have demanded a thoroughly heroic attack in the *beginning* in the way of extirpation of necrosed bone, *after* that the treatment he has used has no doubt been more on the persuasive order, stimulants, or sedatives, or both, as the case may demand, and made earnest efforts to convince nature that she was all wrong in trying to turn that poor invalid tooth out of the family household, etc., intimating that life was not *all* gone just because the pulp had been gathered to its fathers, but that there was still a power behind the throne in the form of a peridental membrane who would help support the family. Couldn't do it quite as well probably as the pulp, still it stood ready to do the best that it could. Nature's violated laws had in a measure been modified to that extent that she had already cleaned out the cesspool that smelt to heaven, began to close up the tunnel of exit by healthy granulation and allowed the offending member to quietly and gently settle down once more in the house where it was born and for many years worked for a living.

When *this* stage is reached the case is turned over to me. No. 2 and I are requested to tell you what I would do with it to carry it forward to such a state of convalescence that No. 3 may take it, and with a few gentle admonitions to go and sin no more, hail him as a brother, and pass him over to the family of fellow grinders, as one snatched from the burning, a trifle weak in the lower story possibly, still strong enough that he may reasonably be expected to do his share of the household work. But where am I (No. 2) to get in any particularly different kind of work from that of my predecessor, and the more that I think of it, the more I do not know, unless it be that I shall represent No. 1 in a somewhat diluted form, which I might do by seeing that the pulp canal was kept clear of foreign substances, and loosely filled with cotton saturated with such medicants as the case might seem to warrant, carbolic acid, creosote, iodoform or something of the kind, light dressings of iodine from day to day, letting time, and the gradual *bringing into use* of the diseased member get in their work, the latter often the very best tonic that can be applied, many a tooth have I seen snatched from the forceps grasp by simply setting it to work. Now I am through and No. 3 may come forward and close the sceance by simply extending a blessing, sending in the bill and ringing down the curtain.

Now this is about all that I know about the treatment of the "second stage of alveolar abscess." My paper may not meet the approval of our worthy president, if not he has only himself to blame. I told him that I could give him nothing that would be worthy of consideration, and probably the only thing that I have done is to fully establish my reputation for truth and veracity. In brief, I do not recognize any *three stages* in the treatment of this disease, but a treatment that may begin in the heroic, and gradually taper down until there is nothing left to work upon, that is when I am *successful*, but unfortunately I am not, where-in I very likely differ from some of my fellow practitioners who have gotten nearer the kingdom than has been my lot, and if there be any such present, these few remarks may possibly be the means of drawing them out to give us the benefit of their brighter and better experiences.

TOBACCO AND ITS RELATION TO DENTISTRY AND DENTISTS.*

BY S. D. POTTERF, D.D.S., DEFIANCE, O.

TOBACCO is extensively cultivated in most parts of the world, especially in the United States of America. Virginia is the most celebrated for its culture. The tobacco used for smoking, chewing, and snuff is derived from several species. Tobacco of commerce exists as unmanufactured, or leaf, or manufactured as snuff, etc. Tobacco contains an alkaloid, nicotine or nicotia, $C_{20}H_{14}N_2$. The generic appellation of nicotine is obviously derived from Nicot, the name of an individual who sent the seed of the tobacco plant to France about 1560. The origin of the specific name tabacum is less satisfactorily ascertained; it is possible, however, that the word is derived from tabac, an instrument used by the natives of America in smoking this herb; though some derive it from tobago.

Physiological effects of tobacco.—Preirie says, when taken into the stomach in liquid form, in small doses, it usually operates as a diuretic, in larger doses it provokes nausea, vomiting, and purging; but its most remarkable effects are languor, feebleness,

* Read before the Northwestern Ohio Dental Society, at Toledo, April, 1890.

relaxation of the muscles, trembling of the limbs, great anxiety, and tendency to faint. Vision is frequently enfeebled, the ideas are confused, pulse small and weak, the respiration somewhat laborious, the surface cold and clammy or bathed in cold sweat. Sir Brodie found that the infusion of tobacco thrown into the rectum often paralyzed the heart, and caused death in a few minutes. Tobacco disorders the heart and nervous system.

Smoking tobacco by those unaccustomed to it gives rise to all the before described effects of large doses, and disorders the assimilating forces in general. The application of tobacco to an abraded surface has in some instances been attended with violent and even fatal results.

"A single drop of the oil of nicotine placed upon the tongue of a dog will produce death. If the amount contained in even two cigars could be thrown directly into the blood it would kill. It is this nicotine that gives odor to the breath, and it is a substance formed from the nicotine that makes an old pipe so offensive. Besides nicotine and the substances it produces, tobacco contains other ingredients, among which are carbonic acid, carbonic oxide, carbon or soot, and ammonia gas. Carbonic acid will produce dullness and headache; carbonic oxide causes the trembling movement of the muscles, particularly the heart; alcohol has an elective affinity for brain matter; tobacco is pre-eminently the heart poison; while ammonia excites the salivary glands, it results in dryness of the mouth and throat. It is ammonia that produces the peculiar biting sensation of the tongue. One hundred pounds of tobacco yields about seven pounds of nicotine, though the various kinds of tobacco differ in quantity. Constant chewing and smoking cannot fail in the majority of cases to produce permanent derangement, though it is less in those whose employment is active work in the open air. Those with sedentary habits will in time become the victims of sleeplessness, nervousness and paralysis. It has great power to produce relaxation of the muscular system. The tendency to relaxation only proves that tobacco destroys the tone of the system; its effects upon the nervous system is to cut off the nervous supply at the extremities, concentrating it upon the centers."

Now, gentlemen, after studying the physiological effects of tobacco on the human system, saying nothing about the filthiness of it, I cannot see how it is possible for any one who knows the

effects of this poison herb, and especially the dentist, because he cannot help seeing the deleterious effects of it every day in his practice, on the teeth and gums of his patients. I say now it does not seem reasonable to me that any one should use this miserable stuff that does not mean food, medicine, or anything else to the system but harm. And it surprises me more to see any dentist who expects to have his patients to respect his influence and advice to them in keeping their mouths clean, which in the majority of cases does quite as much as his filling in preserving their teeth. In fact, filling teeth does not amount to much unless the mouth is kept clean. I say I do not see how any dentist dare to use tobacco in any form. The idea of a dentist having his mouth, gums, teeth and lips, all stained up with liquid tobacco, and his breath every exhalation loaded with the odor of tobacco, which is enough to drive a dog away from him; and if you do not believe it try it sometime on a nice clean dog, he will turn his head and walk away if you persist in exhaling a tobacco breath in his face. I say there is no dentist that has any right to subject his patients to such a breath, ladies or gentlemen. He leaning over them unavoidably while at work, is enough to make them sick, and no doubt it does sometimes, as it does me while at work for patients who use tobacco, and especially if mixed with beer breath, it is simply horrible. And I am sorry to say that I have known of otherwise good dentists who are guilty of imposing just such a mixture on their patients many times while operating for them. And in smoking, one's clothing, hair, beard, and even skin retain the smell of tobacco many days and even weeks after being exposed to the fumes of tobacco smoke. I doubt if many dentists would be willing to indulge in anything else that would leave any other kind of a stink with them so long as that of tobacco. And yet there are few smells that are more offensive to clean people than the smell of tobacco. I have been asked repeatedly by patients if chewing tobacco injured the teeth, and I have been able to answer the question, if they have used tobacco any length of time, by giving them a hand-glass and proceed to examine their teeth with them, and as a rule we will find the teeth more or less abraded on the cutting edges, and sometimes very badly. Indeed, in some cases nearly down to the gums. This may be in most part mechanical, caused by the extra amount of chewing necessary in the use of tobacco; but I

do not think it is entirely so, I think the alkaloid, nicotine and the natural secretions of the mouth combine and form an acid which softens the surfaces of the teeth and make them an easy prey to mechanical abrasion; but just what this acid is I have as yet not been able to find out; but I do find in most every case that on the side of the mouth where the tobacco is carried, there is a black decay at or near the gum, and sometimes two or three lines under the gum, and often reaches half way around the neck of the tooth, and sometimes quite encircles the tooth. These decays are most often on the buccal surfaces of the lower molars and bicuspid, but frequently the molars and bicuspid of the upper mouth are effected as well; and in mouths where a great amount of tobacco is used, it attacks the incisors, fissures of the molars and bicuspid, or any surface of any of the teeth in the mouth, and these cavities are often extremely sensitive; and in the mouths of those who are habitually smoking every day, as some are always smoking when not at work, and some people smoke all the time they are awake except while at meals, in these mouths I find a more or less absorption of the gums; the gum receding most from the palatine surfaces of the upper molars and bicuspid, in fact the palatine root of these molars is often exposed nearly, and sometimes quite to the apex; the peridental membrane entirely destroyed, and the exposed surfaces of the root coated over with a black glaze almost as hard as the tooth itself. I know of one case in my practice, a Mr. H., a man I think about forty-five years of age, who had at one time an excellent set of teeth, and who has been an inveterate smoker since young manhood, and he is losing his teeth one after another, they become loose and finally get sore and he has them removed and there is no decay of the tooth proper. I have said perhaps all that is necessary to convert my dental brothers who smoke or chew tobacco to see the error of their ways. It is often said of a drunkard, "It is a great pity, he is an excellent, good-hearted fellow and a good business man, only he drinks." The same may be said of many good whole hearted fellows in dentistry as well as out, they are in the full sense of the term gentlemen, except they chew or smoke, or both.

Brothers in the profession, let us discard this filthy thing, tobacco, and keep our mouths clean, and be examples to our patients.

ANTISEPTICS IN DENTAL PRACTICE.*

BY GEO. A. MAXFIELD, D.D.S., HOLYOKE, MASS.

IN presenting this paper I do not come before you as a specialist or as an expert in bacteriology, and, therefore, cannot present the result of original investigations.

To members of the dental profession as well as of the medical profession, this is an all important subject. My aim will simply be to gather together some of the facts that such men as Black, Miller, and others have fully demonstrated, and to endeavor to show the practical benefit which may be derived from them.

To Pasteur's observations we owe the first practical benefit of antiseptics in surgery. Ille² was the first to claim that the process of fermentation, suppuration and decomposition, as well as the presence of contagious disease, was due to the presence of a living organism which he termed "*contagium animatum*," and he proved that these processes might be prevented by forestalling the access of the microbe. Pasteur, however, was not the first to discuss some of these facts. In 1836 Caignard de la Tour demonstrated that the yeast cell was a microscopic vegetable cell, which by the increase of its cells broke up sugar into alcohol and carbonic acid. In 1837 Schwan demonstrated that meat and other substances containing albumen became decomposed by germs existing in the air. Among the first to apply the observations of Pasteur to the practice of surgery was Joseph Lister. In September, 1867, he published an article entitled, "On the antiseptic principle in the practice of surgery." In this article the word antiseptic was first used with its present signification. Lister's views as then set forth in regard to wound treatment are still accepted and are: "Decomposition in a wound and affections of wounds due to decomposition, are intimately connected with micro organisms coming from without. The wound treatment and dressing should prevent the access of micro-organisms, and if notwithstanding every care these gain an entrance, they should be destroyed or rendered incapable of harm. The dressing and the substance used for killing the micro-organisms should not irritate the wound at all, or at best very little."³

* Read before the Vermont State Dental Association, held at Bellow's Falls, March, 1890.

Following Lister came Robert Koch, who, by his methods of making pure cultures, and by the logic of his experiments and conclusions, has clearly demonstrated the power of the various antiseptic agents to kill bacteria or to prevent their development. We are indebted to these three men more than to any others for our knowledge of the action of bacteria. The experiments and observations of many men of science proved the position taken by these men, and it became an axiom in surgery that inflammation, suppuration and wound diseases are the direct consequences of the action of micro-organisms.

By⁴ the result of many observers, it is proven that micro-organisms are absent from the fluids and tissues of healthy human and animal bodies and that in health the epidermis, fluids and tissues of the body protect against micro-organisms; that in case of wounds, surgical operations where the epidermis has been injured, or when through disease the epidermis has lost its impermeability, the entrance of micro-organisms becomes possible and these cause inflammation, suppuration and the various wound diseases.

It has been proved also that many internal diseases are due to micro-organisms. Koch⁵ demonstrated that tuberculosis was dependent on the tubercle bacillus, by showing that the bacillus was never lacking in a tubercular individual, and that this micro-organism could be cultivated outside of the individual and remain ever the same; also that the inoculation of an animal with this cultivated bacillus, taken from the first or even from the twentieth generation, would produce tuberculosis. Beside this the cholera or comma bacillus, Obermayer's spiral bacillus of recurrent fever, Neisser's gonococcus of gonorrhœa and the typhoid fever germ, have been fully demonstrated; but the supposition that malaria, croupous pneumonia, syphilis, measles, small-pox and whooping cough are caused by germs, is not yet proven. It⁶ is also known that every kind of pus contains a micro-organism and on account of its racemose shape Ogsten called one the staphylococcus pyogenes aureus. This coccus is widely disseminated through the atmosphere and is singularly resistant to reagents; it may be dried, baked, treated to chemical reagents and yet be neither killed nor deprived of its properties. Rosenbach discovered another micro-organism in pus which he called staphylococcus pyogenes albus, and Passet another which he called staphylococcus pyogenes citreus.

That micro-organisms can and do cause wound diseases has been fully demonstrated. How they do this is a question not fully settled.

The⁷ present theory briefly stated is that this results from an unlimited increase in a mechanical way or through stoppage of capillaries, through solution of albumen or by chemical action. Physiology teaches us, however, that mechanical and chemical agents do not act directly on the body. All processes in man as in animals, in health and disease, progress only under the influence of nerves. Local mechanical and chemical agents work only indirectly on the body through the sympathetic nerves, and thus the microbes work harm indirectly by irritating the sympathetic nerves into a diseased state. The presence of bacteria and their means of support in the body effect an irritation which the sympathetic nerves receive, and this owing to the dilation of enervated capillaries leads to afflux of blood to the irritated part. The congestion, the stasis, the altered local diffusion, and nutrient phenomena, are natural consequences of the local irritation, and when this is of long standing, general disturbances of nutrition occur in the body, that is to say, disease.

Accepting this theory, and knowing that other agents will likewise affect the sympathetic nerves, we must admit that inflammation and suppuration may be caused not only by staphylococcus and streptococcus, but by other irritants. In addition to the staphylococcus microbes it has recently been discovered that ptomaines will also cause suppuration. In studying the action of iodoform, to which I shall allude later, this has been fully demonstrated, and these facts explain many of the phenomena that could only be explained partially by the microbe theory, and thus the maxim previously mentioned that all suppuration is due to the presence of micro-organisms, is now somewhat modified. The micro-organisms referred to throw off certain waste products in their growth which are called ptomaines. The same results do not always follow the inoculation of animals or men with the pathogenic bacteria, but the decomposed fluids even when they have been deprived of microbes by filtration or boiling, have a poisonous effect upon the bodies of animals. "Gautier has shown that in the discharges of entirely healthy animals, poisonous alkaloid, like bodies are to be found which are not products of decomposition, and which he has called leucomaines.

He has found this alkaloid in the saliva, urine, etc., of animals. From the muscle of larger animals he has obtained five different crystalline alkaloids (leucomaines) which were very acid and acted as poisons on the nerve centres. These leucomaines belong to the ptomaine group, both of which found in animal bodies, now number more than thirty."⁸

Prof. Brieger has isolated many of these ptomaines, one he named *neuriline*, another *cadaverine*, another *putricene*, each name signifying its source. He experimented with the typhoid fever germ allowing it to act upon raw meat. With the poisonous principle obtained from the extract he inoculated rabbits, and guinea pigs, and produced many of the typhoid symptoms.

Prof. Miller, of Berlin, says: "It has long been known that the human mouth was the abode of numerous microscopic organisms, but only within the last five or ten years, since the more exact methods of bacteriological investigation have come into use, have we been able to acquire much definite knowledge as to the morphology, physiology, etc., of their minute organisms. * * There is no part of the human organism which furnishes a more universal culture medium for bacteria than the oral cavity, and the different varieties of micro-organisms that find in it conditions favorable to their development, are correspondingly numerous. Of these, the larger part are of a non-pathogenic character, existing upon the various organic substances in the oral secretions, and upon particles of food which have been allowed to remain between the teeth, but producing no particularly deleterious effect upon the surrounding part, other than decay of the teeth."⁹ Dr. Sudduth also adds: "The action of bacteria of the human mouth is by no means confined to dead substances found in the mouth, but a great variety of affections of associate parts as well as more remote parts of the body have been traced to their action. Many years ago Leyden and Jaffe pointed out that bacteria which are found in the mouth, even in a state of perfect health—especially *leptothrix buccalis*—may, under predisposing circumstances, give rise to severe lung diseases. And James Isral, who has given much time to the study of transportation of bacteria from carious teeth, describes a number of cases of abscesses on the neck, chronic pyæmia, etc., which owed their origin to bacteria, either swallowed or inhaled from the mouth. * * * Chronic or acute disturbances of digestion are also

often brought about by the continual swallowing of bacteria lodged in the mouth. Most of the bacteria of the human mouth may pass through the stomach without losing their vitality; and under certain circumstances may produce severe disturbances, both in the stomach and the intestines. Recent researches have also shown that pathogenic micro-organisms, besides such as produce simple local inflammation or suppuration find a favorable culture-medium in the human mouth. Many circumstances point to the conclusion that such pathogenic organisms may exist in the mouth without manifesting themselves in any way different from that of the ordinary saprophytic bacteria, so long as the mucous membrane remains intact. If, however, this becomes reduced in its power, from any cause by resistance, or its integrity is at any place destroyed, then such bacteria may manifest their characteristic action. In this way we can explain the frequent occurrence of extensive suppuration, of abscess, necrosis, even of pyæmia, of diphtheretic and other affections, after extraction; and also the fact that it has proved dangerous to scratch one's finger on a sharp tooth in an unclean mouth."¹⁰ Many experiments by different bacteriologists have demonstrated beyond doubt the presence of the various pathogenic bacteria in the human mouth. "A. Frankel mixed the saliva of healthy persons with broth, and allowed the mixture to stand from four to six hours at blood temperature. Many rabbits vaccinated with this mixture died in from 24 to 48 hours, of septicæmia. In some cases he accomplished the same result with saliva. Miller obtained like results by vaccinating mice and rabbits with saliva from the mouth of a woman affected with mycosis tonsillaris benigna. The animals died within thirty hours after vaccination. The micro-organisms were found in great numbers in the tissues and in the blood."¹¹

Black has repeatedly found pus forming bacteria in the human mouth, and in the experiments which he made to ascertain the value of antiseptics—to which I shall allude later—he planted the culture-medium with micro-organisms directly from the human saliva. The present theory in regard to caries of the teeth is so well known to you that I hardly need to state it, yet for completeness I will briefly present it: "Decalcification of the tooth substance is brought about by acids, chiefly lactic, and these acids are principally produced by the action of micro-organ-

isms on carbohydrates. The solution of the decalcified tooth substance is accomplished by the peptonizing power of the same or other micro organisms."¹² The facts demonstrating this theory have been so clearly shown by Miller, Black, Allen, Andrews and others, as to be fully established.

The theory of an acid saliva causing caries has now no ground to support it. Micro-organisms are the cause; that there are indirect, predisposing causes is well known, yet under the most unfavorable conditions caries will not result if the micro-organisms can be kept away. Allen says: "In brief it is lactic acid that does the work, and it is one of the waste products of bacterial life in the presence of a fermentable substance. It is one of the so-called ptomaines. Only a few bacteria eliminate this acid in growing; but let it be produced and brought into contact with the lime salts of the tooth, chemical action at once takes place. The lactic acid supplanting the phosphoric and carbonic acids of the teeth and forming soluble salts. Fresh supplies of food for the bacteria are constantly obtained from the sugars or amylaceous matters in the mouth, and so each little crack or break in a tooth or other spot difficult of access and hard to keep clean, becomes a focus of destructive activity. * * Were it not for the constant absorption of the acid by the lime salts of the tooth, forming lactate of lime, bacterial life in a cavity would soon cease. They would be smothered in their own waste products and die as naturally as we should, were we compelled to remain in a close room in the presence of the waste products of our own life. * * * The acid first formed commences the cavity, and as solution of the lime salts takes place the bacteria follow after, penetrating and enlarging the dentinal tubuli."¹³

The putrefactive changes in the mouth are also caused by the same micro-organisms that are found in pus, and these micro-organisms are nearly always present in the mouth. Though the theory in regard to the cause of suppuration is somewhat modified, the fact still remains that micro-organisms are the essential factors in the production of a large portion of the suppurative processes.

The presentation of these facts now lead us to the consideration of *disinfectants* and *antiseptics*. The difference in the meaning of these two words is well defined by Black thus: "An

antiseptic only inhibits the growth of microbes; a disinfectant destroys them."¹⁴ The same drug may be used for both purposes, but differently and in different proportions. "Disinfectants are chiefly used in cases where they can be directly applied to some external surface. All organisms on the surface and often those in exudation upon the surface can be destroyed or removed, but it is important to remember that in nearly every diseased surface the organisms are present, not merely in the microscopically diseased surface, but extending into the underlying tissues, which to the naked eye present as yet no pathological change. So far as known the power of penetrating living animal tissues and destroying micro-organisms situated in its meshes, is not possessed by any disinfectant save that of the actual cautery."¹⁵

The physiological meaning of the term, inhibition of the growth of microbes, is as follows: "Suspension of all those secretory or excretory processes which result in the production of ptomaines; and also complete arrest of the multiplication or numerical growth of the microorganisms. The power to produce the chemical poisons known as ptomaines, to which the morbid processes of septic wounds are due, being destroyed; if in addition they are rendered powerless to increase in numbers, the few septic organisms which first gain access to a wound are as harmless as so many particles of lifeless organic or inorganic matter. So long as they do not functionate they cannot do harm. It should be borne in mind that when micro-organisms are thus rendered temporarily inert, their vitality is steadily diminished by contact with the tissue cell, and the probability is increased that the internecine contest between the tissue-cell and the organism, to which Virchow long ago called attention, will result in victory for the former."¹⁶

The number of antiseptics at our disposal is very large and new ones are so constantly being discovered that it has been remarked that "it is easier to discover a new antiseptic than to find the requisite number of wounds on which to test the new antiseptics. It would take more than ten years to weigh the value of those we already have."

In this paper I will consider only a few that seem to best meet our requirements. I will first consider iodoform, for it is through the clinical study of the action of this drug that new discoveries have been made in regard to the processes of inflamma-

tion and suppuration. This drug was known in medicine as early as 1837, and has been used since 1864 by various surgeons as a dressing for ulcerative and granulating surfaces. It was first recommended as a valuable antiseptic surgical dressing by von Mosetig-Moorhof, of Vienna, in 1880.¹⁷ It was immediately accepted as such and extensively used. Soon after various toxic effects were noted, and in 1882 many cases of iodoform poisoning were recorded. By careful use it was found that its poisonous effects could be avoided, and owing to its many advantages it grew in favor and confidence of the ablest surgeons. Among its virtues is the property of exsiccating wounds and minimizing the secretions, of establishing asepsis in all wounds, of preventing the development of luxuriant granulations, its deodorizing quality in offensive wounds, its convenience and portability as a dressing, and its long continued action in wounds."¹⁸ "In 1885 von Mostig-Moorhof reported over eleven thousand cases treated with iodoform without a single case of poisoning."¹⁹ "In 1887, after iodoform had been established, the surgical dressing for more than six years, two Danish authors, Chr. Heyn and Thorkild Roosing, published a treatise declaring that iodoform was destitute of antiseptic properties, worthless as a surgical dressing and even dangerous to apply to wounds." By many practical tests they were able to demonstrate conclusively that iodoform would not inhibit or impede the growth of micro-organisms. This treatise raised quite a commotion, protests coming from prominent surgeons everywhere who discussed this question from a purely clinical standpoint and endeavored to prove the antiseptic power of iodoform. Many bacteriological workers then repeated the laboratory experiments, and from their work the following conclusion was reached, "that iodoform may itself contain germs which might develop under suitable conditions, and that iodoform does not possess sufficient disinfectant power to kill some germs in soil when mixed with them in coarse powder and in considerable quantities. * * * It was not long before it was found that there did exist certain germs upon which iodoform exerted a speedily destructive influence. For Buchner proved that even the fumes of iodoform could inhibit the growth of plate cultures of the cholera germ. * * * Neisser calls attention to the fact that the influence of iodoform differs upon different germs. He experimented upon fifteen forms of bacteria

and endorses Buchner's statement that some bacteria were retarded in their growth. * * * The staphylococci and the streptococci (the germs of suppuration) were in no wise affected by iodoform, and this statement is the more interesting, because in the majority of cases in daily surgical practice efforts are directed mainly against the germs of suppuration. * * * Sanger's experiments now also became known. He found, like De Ruyter and others, that when iodoform was introduced into the wound of a rabbit, at the same time with anthrax organisms, or at a later period, no antiseptic action resulted. If, however, the iodoform was first established in a wound and later anthrax was inoculated, no poisoning resulted. Such rabbits remained healthy."²⁰

The fact as agreed upon by all authors "that iodoform is not potent as an antiseptic in laboratory experiments still seems at variance with general clinical experiments, for the custom of dressing wounds of all descriptions with iodoform is widely prevalent." To reconcile this difference many experiments have been made and various theories advanced. Friedlander proffered a theory that iodoform exerted no influence upon the germs as such, but in some way so strengthened the vital action of the tissues as to enable them to win their conflict with the germs and thus resist infection. Another theory was that iodoform prevented the development of bacteria in wounds by drying up the secretions and causing food-famine. Another, which has been mentioned in many dental societies and admitted into a number of text-books, is, that the vital action of the tissues on iodoform set free pure iodine and thus exerted an antiseptic influence. Neudorfer, who believed that bacteria caused inflammation by irritation through the nervous channels, explains the antiseptic action of iodoform as rendering the sympathetic nerve-fibres insensible to such irritations. A new aspect was given this question when De Ruyter proved by experiments that pus had the property of decomposing iodoform so that pure iodine was formed. Sterilized blood serum did not have the effect of setting free iodine from iodoform, but as soon as the aseptic germs were added to the sterilized serum, decomposition of the iodoform proceeded as before. "Ptomaines without germs had a similar effect and alone could decompose iodoform; but by this action ptomaines themselves were destroyed. In other words, iodoform

exerted a chemical affinity towards the ptomaines and a new combination resulted by which the ptomaines were rendered inactive. Behring pointed out that in this manner iodoform was capable of preventing suppuration without having a disinfectant or inhibitory influence upon the micro-organisms of suppuration. Accepting this explanation "that the effect of iodoform in keeping wounds aseptic is the result of its action in binding the ptomaines it would be desirable to show, to strengthen this position, (1) that germs alone without ptomaines did not cause suppuration in wounds; (2) that ptomaines alone without germs could cause suppuration in the tissues; and (3) that ptomaines mixed with iodoform, but without the presence of germs would not produce pus in the animal body." "As yet experiments have failed to prove the first point, but it has been demonstrated that pus can be generated by ptomaines alone and that iodoform can prevent the formation of pus by ptomaines alone." From this clinical study of iodoform,²¹ we learn that "certain facts have been developed which are of practical value, whatever may be the fate of the scientific theories involved. In dressing wounds the surgeon must hereafter use two different sets of antiseptics. He must seek as far as possible to exclude disease germs or to render them inactive, and for this purpose he must use germicides, such as corrosive sublimate. He must next endeavor, by applying agents like iodoform to prevent the formation of poisonous chemical substances in the wound, or to decompose them and render them inactive if once they have been formed. These latter agents, if they, like iodoform, contain disease germs, must be disinfected before they are applied. Iodoform should be washed in corrosive sublimate solution. It should be brought into as intimate a contact as possible with the surface of the wound, and after its application the wound should be covered with germicide and protective dressings."²²

Dr. Van Arsdale says: "The greatest benefit will be derived from iodoform by its use in operations about the mouth, vagina and rectum, where, owing to its property of destroying the ptomaines, it acts as a powerful deodorizer."²³

As already shown the mouth is a breeding place for micro-organisms; it is therefore essential for success in dental practice that careful study be given to this subject. One of the most valuable papers on *antiseptics* is that by Dr. G. V. Black, read

before the Chicago Dental Society and published in the *Dental Review* for Feb., 1889. A prominent feature of this paper is the "table of results of experimental tests of the value of antiseptics." In the *Medical Record* of Aug. 3, 1889, is a paper by Dr. J. E. Weeks, in which he gives the result of experiments showing the time required by different disinfectants to destroy the vitality of the micro organisms. As an antiseptic and disinfectant, bichloride of mercury still stands at the head of the list. A solution of this in distilled water, standing, forms a precipitate. This may be obviated by adding a small amount of sodium or ammonium chloride to the solution. Dr. G. W. McCaskey says: "It is found, however, that the mercurial salt solutions will combine with any albuminous fluid forming an albuminate of mercury which is absolutely inert as an antiseptic."²⁴ In an address delivered in London the 4th of last November, Sir Joseph Lister says: "I had ascertained that when corrosive sublimate precipitates albumen, the precipitate is not as had been generally supposed, an albuminate of mercury, that is to say, a combination of albumen as an acid with mercury as a base. * * * The bichloride of mercury retains its properties intact, the albumen being loosely associated with it, in a species of solid solution, if I may so speak. Further, I had found that this precipitate, even after drying, is capable of being dissolved in the serum of the blood, and that the solution in blood-serum is powerfully antiseptic, while not irritating."²⁵ It has been found that when a little tartaric acid is added to the bichloride solution the albuminous precipitate is not formed. The proportions, one part bichloride, five parts tartaric acid, and one thousand parts of water, is about the proper strength to use. According to Dr. Weeks a solution of 1 to 500 destroys vitality in ten seconds; 1 to 1,000 in forty-five seconds, and 1 to 4,000 in two and a half minutes, and, according to Dr. Black, 1 to 50,000 will inhibit the growth.

Creosote has long been used in dental practice, although its disinfectant and antiseptic qualities were unknown. According to Dr. Weeks the pure creosote will destroy the germs in less than ten seconds. It dissolves in water in the proportion of about 1 to 250, and in this solution destroys vitality in exposures of thirty seconds; 1 to 400 in five minutes, and 1 to 800 in ten minutes. According to Dr. Black 1 to 910 inhibits the growth.

Carbolic acid, according to Dr. Weeks, 1 to 20 destroys vital-

ity in one-fourth of a minute, 1 to 60 requires four minutes, and, according to Dr. Black, a strength of 1 to 300 is the weakest solution that has an inhibitory action. These results show by comparison that creosote is a more valuable antiseptic and disinfectant than carbolic acid. P. Guttman has lately tested the antiseptic properties of creosote after Koch's method, and he ranks it higher than carbolic acid.

Boracic acid or boric acid, derived from borax. This dissolves in three parts hot water or 25 parts cold water. According to Weeks this is useless as a germicide, as staphylococcus pyogenes retained their vitality when mixed in a saturated solution and allowed to stand ten days. According to Black a strength of 1 to 150 is sufficient to inhibit.

Listerine, extensively used in dental practice, depends on boracic acid for its antiseptic powers. Its proportion of boracic acid is 1 to 30. According to Weeks, undiluted it destroys vitality in exposures of one minute, 1 to 2 in eight minutes. The peroxide of hydrogen ($H_2 O_2$) when of standard strength destroys vitality in exposures of one minute.

Eucalyptol, which is the essential oil of eucalyptus, according to Weeks destroys vitality in exposures of from one to one and a half minutes. According to Black 1 to 380 is the lowest that inhibits.

Hydronaphthol, one of the recent antiseptics, its solubility in water is about 1 to 1,100; when used of a strength of 1 to 3,300 it inhibits.

Oil of cloves used in strength of 1 to 1,200 inhibits.

Oil of cassia used in strength of 1 to 4,000 inhibits the growth.

Boiling water, according to Weeks, destroys the vitality of mature germs on contact. "Creolin, the name of a new antiseptic and germicide, obtained from English coal by dry distillation, is said to possess the following properties for the destruction of microbes; it is ten times more efficient than carbolic acid; it is soluble in water, alcohol and glycerin; it controls hemorrhage and pain; it limits suppuration; it does not injure the hands or instruments and is not poisonous."²⁶

The question now is, how may the facts he presented be applied for our benefit? I will endeavor to give a few answers. First, to the proper cleansing of instruments. We should be particular about this. Every instrument after being used should be

washed in an antiseptic fluid before it is used in the mouth of another patient. For this purpose I prefer a saturated solution of hydronaphthol, it will not injure the polished surface nor cutting edge of the finest instrument. I have often allowed instruments to remain in this solution over twenty-four hours and never the least sign of rust was apparent on them. Before opening into a dead pulp, dip the instruments into boiling water or a strong solution of bichloride of mercury, this will completely sterilize them.

Second, before opening into a pulp chamber or canal, if the rubber-dam is not applied, have the patient thoroughly rinse the mouth with a good antiseptic solution. Then keep the point of the drill bathed with a solution strong enough to act as a disinfectant. For this purpose I prefer a solution composed of peroxide of hydrogen and a 1 to 250 solution bichloride of mercury, equal parts. I want the disinfectant to always advance ahead of the instruments, both into the pulp chamber and canals. In a paper read before the society three years ago I gave my treatment of alveolar abscess.²⁷ As that treatment is in accordance with the facts here presented I have found no occasion in modifying it.

Third, in the treatment of pyorrhœa alveolaris, frequent applications of an antiseptic is often necessary. For this purpose a solution of hydronaphthol in my hands meets all requirements.

Fourth, after a cavity is prepared before inserting the filling it should be thoroughly disinfected and made aseptic. In the *Dental Cosmos* for Dec., 1889, there is an article by Dr. Miller on "the antiseptic action of filling-materials," which is worthy of careful reading and reflection. After detailing his experiments with the various filling materials, he says: "From these results we are forced to the conclusion that copper amalgam fillings exert a marked anti-bacterial influence upon the walls of the cavities containing them. * * * We learn furthermore, that by incorporating certain antiseptics into the mass of the filling, or covering the bottom of the cavity before inserting the filling, we may produce an effect analogous to that of copper amalgam. * * * Personally I have always had much faith in the preservative properties of copper amalgam fillings, because I have had abundant opportunity to observe the splendid results obtained by its use, even when very little care was taken in its insertion.

The experiments which I have made have naturally served to strengthen my confidence in the material, in consequence of which I have used it to some extent in my practice in the last year." It has for many years been my practice in filling large cavities to fill two-thirds of the cavity with oxyphosphate cement and to cover it with amalgam or gold as the case may require. For over two years I have been using for this purpose, and also for capping pulps, hydronaphthol with the cement, using equal parts hydronaphthol and cement powder. I am gratified to learn that this practice is endorsed by such high authority as that of Dr. W. D. Miller.

Fifth, by instructing patients in the proper method of cleansing the teeth and endeavoring to impress upon their minds the need of cleanliness in the mouth, if they wish to avoid the tortures they have to suffer at our hands.

After following the directions here given and having performed the operations with care and skill, we dismiss the patient—to what? To the same care and tender mercies of the micro-organisms they had before they came to us? If this is so I candidly ask, with the knowledge we already possess, *is this method a professional one?* Is it not our duty to place prophylactic agents in the hands of patients, that they may counteract and destroy the enemies that are making such havoc? Is not the constant daily use of an antiseptic mouth wash plainly indicated? I have written this paper with the purpose of impressing upon your minds that it is as much a necessity to prescribe an antiseptic mouth wash, as it is to insert a filling.

The essential requirements in a mouth wash are, (1) that it shall be antiseptic; (2) that it shall be a deodorizer; (3) that it exert, at least, a slightly stimulating effect on the mucous membranes; (4) that it shall not contain anything poisonous, *i. e.*, if a large quantity be swallowed accidentally there shall be no danger; (5) that its cost be reduced to a minimum, to be within the reach of all patients; and (6) that it shall be freely soluble in water, and be agreeable to use.

The bichloride of mercury is a powerful poison and should never be used in a mouth wash, unless in a very dilute mixture.

Boracic acid meets many of the requirements, and by the addition of menthol, thymol and gaultheria you will have almost the same thing as listerine. Listerine is an excellent mouth

wash, a perfect deodorizer, the main objection being its expense. Hydronapthol answers the above requirements better than any other antiseptic that we have, and from my own experience I can recommend it for this purpose.

And now in closing. To emphasize my conclusions I will quote from a paper read by Dr. R. R. Andrews before the Connecticut Valley Dental Society: "Who has not heard of the old essay of cleanliness of the mouth?" written in the second century by Lucius Apuleius, the author of the story, "Cupid and Psyche." "An orator with gifted powers would declare that from him, above all men who have any care for the art of speaking, the mouth requires more sedulous attention than all the rest of the body, seeing that it is the vestibule of the mind, the gateway of speech, and the outer court of the thoughts. Nothing so ill becomes a man who is of free birth, and of liberal education, as inattention to the appearance of the mouth. You look upon no feature before this while one is silent, none more frequently while in the act of speaking. Is one in the habit of washing his feet? Will he contend that greater care ought to be bestowed upon the cleanliness of his feet than upon his mouth? How in the name of misfortune is it consistent with reason to contend that one can have a clean and purified tongue, and at the same time a loathsome and offensive mouth? He that utters language that is pleasing, with good reason washes out his mouth beforehand, like a cup that has been prepared for containing a pleasant draught."

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RUBBER GUM FACINGS ON DENTAL PLATES.*

BY N. MORGAN, D.D.S., SPRINGFIELD, MASS.

THE construction of a denture with a rubber base is a comparatively simple matter, and the process so familiar that any suggestions regarding it may seem unworthy of your notice. Yet though we may be very familiar with its essential details are we satisfied if we are masters of only one method of performing an operation? The requirements are such that we need to have different methods at our command that in any given case we may be fitted for the service required.

It is for this reason that I present for your consideration the subject chosen. Not that I expect or desire that you should in future confine yourselves in this department to the use of *plain teeth* and *pink rubber gums*, but that this may prove one of your resources in an emergency. That instead of being restricted to the conventional use of *gum block teeth* and the distortion of features result, out from their use you may gain such results that it can hardly be suspected and much less known that the person is confined to artificial substitutes. I would not have you understand me as in any way speaking derogatory of "gum teeth," for that is not my desire. I fully recognize their usefulness and beauty in all cases where the conditions warrant their use. I affirm, however, that though the market affords us so great a variety of them in a large percentage of cases the most artistic results cannot be attained by their use.

With the use of *plain teeth* the opportunity of displaying skill and taste is endless. They may be inclined inwardly or outwardly, partly turned, separated, or crowded and lapped, one longer or shorter than others, or one interposed which is somewhat off color, similar to a tooth with dead pulp. Fillings may also be inserted if so desired.

That our pathway is not "strewn with flowers," even after having chosen plain teeth for a given case, is soon proven, for in this method we must seek some substitute for the gum portion. There was a time when we hoped that celluloid would realize to

* Read before the Vermont State Dental Association, held at Bellow's Falls, March, 1890.

us all our demands, and temporarily it was very beautiful; but it soon proved as delusive as an *ignis fatuus*. At present our own resource, imperfect though it may be, is some one variety of pink rubber. Being an imperfect substitute we must in some way avoid this misfortune. In other words it must not be permitted to show so much as to be noticeable, otherwise the result may be as disastrous as though gum sections were chosen. It is an old saying that "what is worth doing at all is worth doing well," and this applies as truly to the fabrication of an artificial gum as anything else.

Such dentures which have come under my observation do not justify me in always using words of praise. In some cases the rubber is permitted to so encroach on the teeth as to prove a serious blemish; many times also the base rubber is exposed in large or small patches causing a very unsightly appearance. In other cases the entire position outside the alveolar border is of pink rubber and even shows itself in patches on the lingual and palatal portions of the plate. Some who are more painstaking in their operations to secure desirable results resort to two vulcanizings, the first for the base and then excavating for the inlaying and vulcanizing the gum. This is the method given in the *American System of Dentistry*, and is practiced at the expense of much labor, and does not result in as strong a plate as if vulcanized but once. Many of us have doubtless had experience with the use of celluloid and know all about its fickleness. I rejoice, however, that though in itself essentially a failure it resulted in good in that it revealed to us the desirability of more frequently using plain teeth. Since that time plates with gum facings have been a study for me, and the result is my present method for their fabrication. I may remark that the method is not alone applicable to entire rubber plates, but also to all cases where the teeth are attached to the plate with this material. If you will now follow me carefully I will endeavor to make the way plain to you. The teeth selected should be of such length as to show sufficiently and yet reach so high as not to expose much of the gum in laughing. Their length need not be noticeably out of proportion ordinarily to attain this end. They may of course at this time be arranged to suit the taste of both operator and patient—perhaps—and if a single set, to harmonize with the occluding ones. A discolored tooth, preferably a lateral

incisor, representing a tooth with dead pulp, may at times be interposed with good effect. Where there are but few occluding teeth improved, masticating surface may at times be secured by the use of bicuspid in place of cuspids. These, if suitably modified by grinding, may also make an improved appearance. If the case demands a very thin gum the teeth should be ground to set very close to the alveolar ridge, and in *every* case their cervical edges well beveled toward the face side. This is to assist in securing even, curved lines of the gum, and also to prevent the tooth margins being chipped in finishing.

The waxing up of the model plates is one of the most important steps in the whole process, and all contouring, and determining thickness of plate, should be arranged at this time that there may be no excessive amount of filing and scraping later. Before imbedding the case draw a line on the wax which shall be precisely what you desire for the upper margin of the gum, and when investing let the plaster come as evenly as possible to that line. Fill the other part of the flask as usual. In opening warm just sufficiently to avoid any breakage of the plaster, and also retain the trial plate in as perfect a condition as possible that it may be a guide to the amount of rubber required in packing. Cover the model with tin-foil well burnished. The waste gates must be cut from the posterior palatine portion backward and *never in any other portion*.

In packing, commence with the base plate rubber and pack about the pins of the teeth till the pins are well covered. Then of the pink rubber cut little oblong pieces perhaps an eighth or a sixteenth inch in size. These are to be packed between the teeth at the cervical portion, to serve for the gum margins. If the waxing outside the ridge was *thin* the next step will be to cut a strip of the pink rubber of a width to reach from the other rubber (which covered the pins) to the edge of plaster which fixes the height of the gum. The length of the strip should be sufficient to include the teeth. This should be laid very evenly in place and there carefully covered with a similar piece of the other rubber of a sufficient thickness that the two will at least equal that of the model plate in that portion. It is at times necessary to warm and stretch the dark rubber very thin to attain this result. If the waxing was *thick* it would be better to use two thicknesses of the pink rubber. If the edges are now found to be

above the edge of plaster, they should be trimmed evenly with scissors. The palatine portion may now be packed in the usual manner. The last step in packing will be to fill *very evenly*, with the dark rubber, the groove around the cast in the other part of the flask. This forms the portion above the gum line and its evenness depends on these lines being made and kept perfect.

These two sections are now to be united and placed in the spring press in such a way that the anterior portion will come together decidedly in advance of the posterior. This is to force all the surplus rubber backward and so prevent displacing that portion forming the gum.

In finishing the plate there will be no danger of exposing the dark rubber through the facing unless the waxing was such as to necessitate such reduction in thickness. In polishing I first use duck or felt wheels and wet pumice stone. For the cervical portions (which troubles most operators) I use a small stiff brush wheel, with the bristles cut down to not more than one-fourth inch in length, also with wet pumice. Brush mostly from tooth to gum, constantly oscillating the case to prevent forming grooves and this part will not prove very difficult. The final polish may be secured by means of soft brush wheels and chalk.

If these directions are carefully followed, the resulting plate will present well defined gum lines and there will be no exposure of pink rubber beyond its borders.

Instead of the haphazard, unreliable and uncertain methods commonly practiced, this gives us assured results.

The improvement we still demand and which we trust will ere long be given us is a plastic gum which will truly represent nature.

PRESIDENT'S ADDRESS.*

BY DR. W. H. SPENCER, POULTNEY, VT.

It is with a mingling of pride and timidity that I occupy the chair of your presiding officer. Nevertheless, I recognize the honor, and am proud of the compliment. I thank you for the evidence of your respect. The code requires that at this time I make an address. I have chosen to say a few words on societies

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and especially of our own, which is now fourteen years old. It has reached its teens; a time of life where it should enjoy especially the vigor of youth. That it is not contaminated by any constitutional taint is shown by there being no signs of premature decay. We do not see in it the paleness of death, or anything suggesting a sickly life. Prosperity seems to be seated upon its banners, and good fortune to have smiled upon its way. Under such favorable auspices one more year is nearly finished and another almost begun.

Now let us ask ourselves the question, What is the good of a dental society? We have all been taught that it is not good for man to live alone, and that this is especially true of a dentist, it is certainly unnecessary to argue, He should not live in a den lest he become a recluse. He should seek out the company of his fellows and not become afflicted with that mental perversion by continually looking upon the shadows and sorrows of life.

The social advantages of a dental society are by no means small and the better we become acquainted with men, the better we can get along with them. We can overlook a great many little things which otherwise would have excited a petty jealousy. We learn how to take jokes! our toes are not so easily trodden upon. We, in fact, are made more amiable men. Our rough edges are rubbed off, and the polish of contact takes the place of the roughness of the recluse and the more we are thrown into one another's society the easier it is to forgive and forget, and the more truth do we find in the saying that to err is human, to forgive divine. Again, the acquisition of knowledge which one gets as a member of societies amply repays him for the time spent at the meetings. One member gives his attention to this subject, another to that, as his tastes or inclination lead, and the looking up of these subjects, actuated as they may be by a laudable desire to present something of interest not only benefits the writer but the hearer as well. The younger members fresh from the curriculum of the schools and listening as they have been so recently to the masters of the profession, keep the others well abreast with the newest and freshest theories. They will fill us with their youthful ardor and the slackening and tired steps of many a veteran, I believe may have grown lighter and made to press more bravely on by imbibing of their vigor. Our seniors on the other hand, grown or growing gray in their work, can tell us the

wheat from the chaff, their knowledge like old wine, has grown better with age. It has given up its useless properties, and what is left is as clear as the crystals of distillation. Practical, for it is the result of long practice. Reliable, for it has been tested in the crucibles of their experience.

Such are some of the things we can gain from each other. We should not spurn another's advice, nor frown upon the giver. A dental society is the dentist's school room; it is here that he will meet an appreciative audience if he has information to impart, and kind consideration if he seeks information. To him it is a talisman and beacon light set far up on the headland of knowledge; the greater his love for it, the closer he clings to it. The practice and principles of dentistry are as broad and boundless as the ocean. No "pent up Utica" can bound the practice of one who has even but sounded the different notes on the keyboard of our profession. But in order to keep our ears continually attuned to the melody of its different keys there must be a constant faithfulness to our society's obligations. There must be diligent work; no indifference as to its duties, or lack of energy in making the meetings interesting; for if we have a strong and well managed society we will have in it a tower of strength to the profession. We shall be like a solid phalanx, united, keeping step in advancing our society's prosperity, and in direct ratio raising the standard of our profession.

In these few lines, gentlemen, I have endeavored to show you some of the advantages of a dental society, its social, its intellectual, and its honorary; and if by bringing them to your attention our society may be made more prosperous, I shall not consider them to have been written in vain.

WARRANTED.*

BY DR. J. A. ROBINSON, MORRISVILLE, VT.

I HAVE no notion that brother Parker, when asking me for an essay or a clinic to be presented at this meeting, had the least idea that he would get anything very great or scholarly, for that is entirely beyond me. I cannot write a thesis or hold an argu-

* Read before the Vermont State Dental Association, held at Bellow's Falls, March, 1890.

ment, but ever having a desire to do what I can I will present what I have written.

In answering to his call my first idea was to refuse, but upon second thought I decided to ask a question and give a little experience of my own, hoping thereby to start a little discussion upon a question that would very likely result in some good to many of us. Perhaps there is no help, and perhaps there is; if there is, I, for one, wish to know what it is.

The question I wish to ask is this: Shall we warrant our work, or shall we not?

If we warrant it, for how long, how far, how much and against what? Ought more to be asked of us than of any other profession or trade? Shall a physician be called upon to warrant a cure? Shall the lawyer warrant the winning of all cases he undertakes? Is it expected of a minister that he will warrant heaven to all his congregation? Do we expect the school teacher will warrant a finished education to every one who may pass in at the school house door? No. A thousand times, no. We expect nothing of the sort. If we call in the physician we only expect he will do his best to relieve us of our distress, and when we are through with him we expect to pay him his just dues, and if he fails in making a cure we do not think of refusing to pay his bill. So also with the lawyer, when he undertakes a case he expects a fee and he gets it too, no one thinks he will do business for nothing. The minister can neither send you to heaven or hell, where we go to when we die is a question which concerns more than just the dominies say so for it. The school teacher simply agrees to do the best he can, and the scholar who will do his part is liable to get there in the long run, but the teacher cannot put him there without the efforts of the student be directed in the right course.

We do not expect the merchant will warrant his goods never to fail in any respect, cloth never to wear out, a barrel of flour to last forever, crockery and china not to break, etc., etc. The tailor to warrant his clothing not to wear out, rip or tear. And so on through the whole catagory of trades and professions.

How absurd all this is. Still, the general opinion is that the dentist must warrant his work, in all cases, in all respects, from all accidents, from wear and tear and for time and eternity. Can they? Why should they? Let me give you an illustration of some of the cases I meet with.

Mrs. C. came to me a year or two ago wishing me to reset her teeth for her. It was then a celluloid plate and plain teeth ; she wished the same teeth reset on rubber. I did her work for her as she wished, and she was well pleased with it. A few months ago she came back with one of her teeth broken off across the pins, the plate was all right and the remainder of the tooth firmly imbedded in the rubber. After repairing it she was astonished because I charged her for the job. "Why, didn't you warrant them?" she said. "I guaranteed that my work was all right when you got it." "But," says she, "they have broken." "Yes, I see they are broken ; but has any of my work proved faulty in any respect? Isn't the plate all right? Does not the rubber cling tight to the pins of that tooth, and are not the other teeth firm in the plate, what more could you ask?" "Yes, but the tooth is broken off," says she again. "So it is, but I did not furnish the teeth, you furnished them and I put them on the plate." "Well now, honestly, I think they ought to have lasted longer than this, and I think you ought not to ask me anything for doing the work," says she. "That is absurd, I did not say the teeth would not break, I had nothing to do with the teeth whatever." At last she paid the bill. Now I said, "I do not warrant these teeth for several reasons, you have only eight teeth on the under jaw and they are in front and so are liable to break all the front teeth off the plate. I cannot warrant them with a purpose to do myself justice, the plate is rubber and liable to receive injury like any other article made of rubber, the teeth are as perceptible to nicking or breaking as is your china-ware, therefore do not expect too much of them. Clothing, in fact everything in constant use is liable to wear out, break, and in many ways come to repair, for goodness sake then, do not expect more of a set of teeth than you do of anything else under the sun."

Now I ask, is there no remedy for this? Because dental tramps have been the means of teaching the public that there can be such a thing as bantering the prices of dental work, and because they warrant their work without the first idea of ever making any warrants good, must we, who are established in one place and cannot escape the demands of a deluded public, be called upon to do the same? It is not fair to the honest man who has a desire to be honest with all his patients and with himself.

I hope these few words may call out remarks from several, and if we may get a few good ideas from such a discussion, I shall be satisfied.

RESOLUTIONS ON THE DEATH OF DR. F. M. SCHELL.

WHEREAS, Since our last meeting it has pleased the Almighty to remove by death our beloved brother and associate, Dr. Friend Miller Schell, of Rutland; and

WHEREAS, Not only the association but the profession of the State has suffered a severe loss; therefore

Resolved, That we deem it fit and proper to give expression to our high appreciation of his personal worth, and of our regret that one who was so essential to the true interests of the profession should have been summoned to the higher councils. Yet while bowing to the will of Him who doeth all things well, we cannot refrain from giving expression to our feelings of sorrow that he should have been removed from us.

Resolved, That these resolutions be placed upon the memorial page of this society, and a copy of the same be sent to the deceased, and to the dental journals.

GEO. F. CHENEY,
E. E. MCGOVERN,
G. H. SWIFT,
Committee.

Editors' Specials.

"Write the Vision and make it plain."

SPECIALTIES IN MEDICINE.

OFTEN have we felt it a duty to advocate special study and practice in medicine. The whole field of medical science and art is too large to be successfully and thoroughly cultivated by individual efforts. This is more and more noticeable as time progresses. But while it is desirable, if not almost necessary, to resort to specialties in study and practice, it is not at all improper to recognize certain tendencies in such study that may result in more or less disaster.

A man is apt to see what he is looking for, or at least he imagines he sees it, and that affects his diagnosis as much as if it were real. When young the writer practiced medicine in a country town of northern Ohio. An aged physician was sometimes called in as counsel. He was failing mentally; and in the beginning of his brain trouble a severe epidemic of erysipelas prevailed. When in council, in addition to other things, he invariably diagnosed "a touch of erysipelas." He would say, politely, "You were not here when that fearful visitation was on us. Your diagnosis is correct, except that you have overlooked a touch of erysipelas on the kidneys." Sometimes he found it on the liver, the spleen, or the stomach, but he never failed to find it.

It is hoped there are no counterparts in the dental profession. But too many find a slight deposit of tartar, with reddish gums, and call the combined condition "*pyorrhœa alveolaris*," and cure it by a single application. We have no objection to the term, for it was a dear friend that left it to us; but we are sorry that some of our brethren find so much of it; and we are scarcely glad that they cure it so easily.

That such practice is not entirely new may be proved by an epitaph written by Dr. Lemuel Hopkins in the eighteenth century. A patient had a cancer on his nose, and had tried an infinitude of plans of treatment.

"When fortune led him to peruse
A handbill in the weekly news;
Signed by six fools of different sorts,
All cured of cancers made of warts."

In the *International Journal of Surgery*, for June, 1890, p. 122, we find some thoughts worth transcribing, which lead in the same line we have been pursuing. It speaks of "The Prevailing Epidemic of Reflex Affections," and says: "It is natural, and indeed inevitable, that those who devote their lives to the study of some special group of diseases, or who limit their practice to the maladies of some one organ, should magnify the evils that spring from the affections with which they are brought in contact, and extend the sphere of their usefulness beyond the ordinarily accepted limits. The interdependence of the bodily functions is such that it is not beyond the range of possibility for the remotest results to flow from any one derangement. Hence has arisen the teaching of reflex diseases, against which, as a truth, no word can be said.

Now it can readily be seen that such a theory of disease is liable, if not kept strictly within bounds, to degenerate into a pair of pathological spectacles of colored glass; in which all things are seen—not darkly—but clearly; only, alas! all of one color. Thus, A. is a gentleman of uterine proclivities, and his glasses are green. The pathological world is clear and verdant to him. A subinvolution or a urethral caruncle explains to him the cause of the maladies that afflict one-half of humanity; and if perchance a fibroid tumor or swollen ovary rewards his search for something removable, then indeed he has the very pathological devil by the hair!

But then here comes B. His glasses are not green—but blue. The scene of his exploits is the nasal cavity; a narrow space, and somewhat excluded from public view; hence he must bestir himself the more actively, and make what noise he can. In his azure view the turbinated bodies form the prominent features of the landscape, and in the recesses of the nasal sinuses must the fountain of health be sought for. There is a back ground of lungs and heart and general system—which he perceives dimly; but their condition is of no importance in comparison with the necessity of having a rectangular septum or an absolutely smooth pharyngeal vault.

C.'s glasses are neither green nor blue. They are smoked, and he lives and has his being in the atmosphere of the distal end of the alimentary canal. He finds that mankind suffers from rectal fissures, hemorrhoids, and constipation. There are some other troubles, it is true; but, as he said recently to a myopic friend of ours,—‘Only have your sphincter ani dilated, and your eyes will be all right!’”

The “boys” in our regiment suggested other treatment for the sphincter muscle, but the morbid condition was not the same. When “surgeon’s call” was sounded by the bugle, the privates, in distant parts of the camp, would join in singing,

“Here’s your muriated tincture!
Drink it down! Drink it down!
Here’s your muriated tincture,
It will tighten up your sphincter—
Drink it down!”

Poor “boys,” they, too, were specialists, not recognizing much but camp diarrhoea, in the realm of morbid conditions.

As already intimated, we must have specialists. But recognizing the tendency to magnify the specialty, let us be on our guard. The special practitioner is expected to know more about his specialty than does the man in general practice; just as the gardener is expected to have his garden in better tillage than the farmer has his many broad acres. But the specialist has ordinarily a narrower range of thought than the general practitioner. But there need be no antagonism, for with a wider knowledge of pathology, each class will find its proper place.

PERSONAL RECOLLECTIONS.

AMONG the writer's classmates there is one fellow *alumnus* that memory delights to recall. We had both reached years of maturity, if not of discretion. We first met at the Ohio College of Dental Surgery as fellow students, one of us trying to teach chemistry, as well. We were about equal in age, and not greatly different in size, and there the likeness ends. He was good-looking—the manliest looking man of our acquaintance. He was gentle as a woman. Though possessing the physical strength of three or four ordinary men, he was never known to use it but in the interests of peace. Indeed he was a peacemaker, and it was hard to get up a quarrel in his presence.

Doctor Kendall was a good student, and became an excellent dentist. Among other attainments, he was an expert in continuous-gum work. His full name was Moses Wilson Sampson Kendall. He was no ordinary babe, and it seemed to require an extraordinary array of names to meet the necessities of the case. At birth the testimony is that he was a counterpart of Esau, the twin brother of Jacob. His entire body, excepting soles and palms, was covered with red hair. Along the spine, and over the shoulder blades, this was about three inches long.

He went to California, with a band of adventurers, at an early day. He allowed his hair and beard to grow while there, and on returning had his likeness taken before calling on the barber and hair-dresser. He was quite a curiosity. His beard extended below his vest. When eating he was wont to part his mustache, and lay it back of his ears.

While in the golden State he had a fight with a freshly

caught grizzly bear, said to have, at a later date, traveled with Dan Rice's show, and its weight was stated to have been thirteen hundred pounds. He was armed only with a very heavy club; and the bear got loose by slipping its collar. Many of the spectators were severely hurt by leaping from the higher seats of the amphitheatre. Dr. K. preferred a fight, rather than make the dangerous leap. As he stated to the writer, he left the seats for the level ground intervening, and as the bear approached, he knocked him down with the club. Springing up he was again laid prostrate by a blow. A third blow on the tip of the nose caused him to rear with pain, and place his paws over the injured part. Just as he raised his head from this position, a Mexican, who had remained on one of the upper seats, threw a lasso over it, and seeing that it was secure about the neck, the doctor seized it with his left hand, showered a series of rapid blows on the nose, and by the aid of the Mexican he soon had it choked down, and it was secured by the proprietors.

We had an amusing prospect of a fight within the college class growing out of this incident. We had an eccentric junior who fancied himself an artist. Instead of notes of the lectures he filled the pages of his blank book with attempted portraits of the professors and members of the class. He had the kindness to write beneath the name of the original of his sketches. On one page was found the following: "This is a true likeness of Dr. M. W. S. Kendall, the man who whipped the big Dan Rice's bear, the weight of which was 1300 pounds with a club." He had left his sketch book in his seat one day, and on his return found written in it, "Query—How much did the bear weigh without a club? And how much did the club weigh without the bear?"

The artist vowed dire vengeance on the querist, and devoted much of the remainder of the session in trying to identify him, but made a total failure.

Dr. K. died in the prime of life, while many members of our profession have lived to a good old age, though feeble all their lives.

AN APOLOGY.

ON account of accommodating the Michigan and Vermont State Societies by publishing their papers in July and August JOURNALS, we have been obliged to vary from our regular order and leave out our Prosthetic Dentistry and What We See and Hear columns in these numbers, but the September issue will appear with all the departments as usual.

OUR JUNE NUMBER.

WE do not propose to speak of all the good things in this number, but the reader will indulge us a word or two about Dr. Butler's "Gold and Tin in Saving Teeth." The method he adopts in using these metals is, perhaps, the very best. It is very important to not depend on the gold adhering to the tin. If the cavity has not a retentive form it is necessary to the best results to make retaining pits or grooves.

With the present care in preparing tin foil, the two metals do not differ in their magneto-electric properties sufficient to cause danger from galvanic action. To develop galvanic action one of the metals must be acted on, but the buccal fluids do not ordinarily act on pure tin. Where any electric trouble occurs (and we have witnessed it) we are inclined to think it is due to thermo-electricity.

Tin has been entirely too much neglected by the profession, especially with young patients. We regret that for seven long years, while in full practice we did not use it. We wronged some of our patients.

THE AMALGAM SNEER.

THAT nearly all dentists use amalgam cements is evident, and is freely conceded. Some use it under protest. Some when caught using it apologise, and explain that they seldom use it. Well, that is the way they used to do. We have not seen them

lately. In these days of setting crowns the case is different, perhaps it is necessary now.

But because nearly all use this material, it does not follow that all do so; and the few who do not, are entitled to belief when they state they do not. The senior editor of the JOURNAL never used amalgam, and never saw it used; but he does not expect this statement to be generally believed.

Societies.

"Wherewith one may edify another."

VIRGINIA STATE DENTAL ASSOCIATION.

THE Virginia State Dental Association will hold its twenty-first annual session in the High School building, at Roanoke, Virginia, Tuesday, August 26, 1890, beginning at 9 o'clock A.M. We confidently expect this to be the largest and best meeting the association has ever held. All members of the profession are invited to attend and will receive a cordial welcome.

J. HALL MOORE, *Cor. Sec'y.*

THE State Board of Dental Examiners will meet at the same time and place for the examination of candidates to practice dentistry in the State. All applicants must be graduates of some reputable dental college.

W. E. NORRIS, *Sec'y.*

TO THE MEMBERS OF THE DENTAL PROFESSION.

YOUR attention is called to the next meeting of the Ohio State Dental Society to be held at Columbus, October 28, 29, 30, 1890. You are cordially invited to be present and participate in the meetings if possible. Those having new appliances or methods of practice for the good of the profession, are solicited to communicate with the committee, who will take pains in offering an opportunity for the proper presentation of the same.

A. F. EMMINGER,

W. H. TODD,

OTTO ARNOLD,

Address, COLUMBUS, O.

Ex. Committee.

ST. LOUIS DENTAL SOCIETY.

At a meeting of the St. Louis Dental Society held on Tuesday, May 20, 1890, the following resolutions on the death of Dr. Homer Judd were adopted :

WHEREAS, The members of the St. Louis Dental Society have learned with great sorrow that death has removed from us our loved and honored associate, Dr. Homer Judd ; and

WHEREAS, By reason of his great natural abilities, ripe scholarship, zeal, industry and integrity, he was recognized by the dental profession as one of its most influential members ; a man who devoted his life to the honor and advancement of his profession ; and

WHEREAS, During a long professional life, his relations with this Society have been such that it is our pleasure and duty to record our high appreciation of him ; therefore

Resolved, That by the death of Dr. Homer Judd the dental profession has been deprived of one of its most able and useful members, one whose influence for good will live forever.

Resolved, That we extend to his family our sincere sympathy in their great bereavement.

Resolved, That a copy of these resolutions be sent to the family of the deceased and to the dental journals for publication.

W. H. EAMES,

HENRY FISHER,

A. J. PROSSER,

Committee.

MRS. E. E. CHASE,

Cor. Secretary.

POST-GRADUATE DENTAL ASSOCIATION.

THE annual meeting of the Post-Graduate Dental Association of the United States was held at Chicago, June 25, 1890, and the following gentlemen were elected officers :

President, Geo. H. Cushing, M.D., D.D.S., Chicago, Ill. ; Vice-President, Dr. R. H. Cool, Oakland, Cal. ; Sec. and Treas., Lewis S. Tenney, D.D.S., Chicago, Ill. Executive Committee,

R. B. Tuller, D.D.S., Chicago, Ill.; Dr. J. M. Gallehugh, Chenoa, Ill.; Dr. G. W. Milton, Silvertown, Col.

This association is but a year old, but it starts out with good prospects of becoming a large and popular national organization, and has a grand work before it. Its object aside from the same general one of most dental societies is to particularly encourage and stimulate post-graduate studies and the establishment of facilities for the same in dental colleges. It also contemplates, when its membership will admit of it, establishing a systematic course of home study with benefits not unlike the Chatuaqua Literary Society perhaps, but the plan is not yet sufficiently developed to admit of outlining at this time.

While the name "Post-Graduate" would imply an association of graduates only, the broad view is adopted of extending the work among all legal practitioners who may desire to join and co operate, but practitioners not graduates are not eligible to membership until they have passed a post-graduate or practitioner's course in some reputable and recognized dental college.

Members of the profession who desire to become members of the Post-Graduate Association should correspond with the Secretary, Dr. Lewis S. Tenney, 96 State St., Chicago. The membership fee is \$1. Annual dues, payable in advance, \$1. Certificates of membership are issued when the member duly qualifies. Membership may be obtained through correspondence when evidence of eligibility is presented.

UNIVERSITY OF MICHIGAN—DENTAL DEPARTMENT.

At the forty-sixth annual commencement, dental department, University of Michigan, held Thursday, June 26, 1890, the following students received the D.D.S. degree:

W. R. Calhoun, L. D. Camp, E. Catt, C. E. Collamer, C. F. Cook, G. H. Copp, N. K. Cox, C. H. Farman, F. D. Fisher, Ida Gray, J. J. Green, J. J. Guisti, B. F. Hall, E. A. Honey, W. G. Howley, C. M. McElroy, M. A. Mason, C. C. Merriman, J. B. Keesing, E. L. Moore, G. Northcroft, H. T. Osborne, J. A. Oswald, A. J. Rust, C. B. Scudder, Alice L. Sherman, W. H. Sieberst, F. C. Sizeland, M. F. Stever, F. B. Tegener, G. T. Thuerer, H. D. Van Antwerp, G. H. Veldhuis, J. H. Waterhouse, C. E. Welch, G. W. Welch, H. L. Williams, P. Woolsey.

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

SOME REMARKS.

BY J. S. CASSIDY, M.D., D.D.S., COVINGTON, KY.

DOCTOR FAUGHT in a recent number of the *Dental Cosmos*, under the head of "American Want of System in Dentistry," seemed to deplore the fact of there being widely diverging views in regard to methods of practice in the various and varying operations we are called upon to perform.

That there is a lack of system in American dentistry, can hardly be conceded, but of course, there is a difference in some of the means employed, and intended, perhaps, to attain the same final result.

Dentistry is not a fixed science, and in the nature of the case never can be. It is largely experimental, therefore necessarily progressive, involving the consideration and employment of means to ends by each practitioner, according to his own recognition of the truth, although agreeing in the main, with the general consensus of opinion in regard to the special case in hand.

People do not dress alike in civilized countries,—albeit the late introduction of the divided skirt, may be the adumbration of

more uniformity in this respect,—and no one will say that the object of clothing our bodies either for comfort, or to please the vanity of individual taste is not accomplished.

And so it is with our work. We cannot always see things by the same line of vision that others see them. For instance: some one describes a case in practice. It may be the capping of what he terms an exposed pulp. The writer or speaker, goes on to say that after removing all the diseased dentine possible, he applied a paste of zinc oxide and oil of cloves, over that, zinc phosphate, and then finished with gold or amalgam. He claims that all such operations were permanently successful in his hands.

Now in my mind, I probably see the real condition of the part: the pulp was still covered by sufficient dentine to render his procedure safe and eminently proper, although by the way, you might prefer to use a thin shaving of gutta-percha wet with chloroform or oil of eucalyptus, instead of the oxide of zinc and oil of cloves. But how many will see the case in this light? Perhaps the majority will suppose the pulp was actually exposed, and therefore honestly jump to the conclusion that such practice as described will not prove permanently successful. Better, they say, would it be to destroy the pulp at once, and thus be fully assured of saving the tooth.

Both sides are correct, according to the assumption that the pulp is not, or is, really exposed.

Again, a gentleman describes his method of treating root canals. Having in his mind perhaps, only one condition for treatment, his therapeutics are of course directed to that condition only. It may be an aching pulp easy of access. He applies arsenic, removes the dead organ, swabs out the canal with carbolic acid, or some other coagulating antiseptic, and fills at once. Some of us will object to this procedure because we have in mind cases where putrefactive changes are occurring; we therefore denounce the use of carbolic acid or other coagulant, claiming that the insoluble albuminous phenates, etc., dam up the dentinal tubuli and thus prevent the escape from them of the putrefaction products. We may think we are looking at the same thing through the same spectacles, but we are not.

In the first place the removal of the recently devitalized pulp leaves the canal in an aseptic condition; but in order to prevent the possible submission of the yet bleeding apical thread, and of

the contents of the tubuli, to bacterial influence, an antiseptic should be used ; and of these carbolic acid, or some of its combinations, such as campho phenique is assuredly one of the best.

To coagulate or mummify a substance with a true antiseptic, is a helpful means of preventing the growth of bacteria therein, and to the same extent the prevention of decomposition.

On the other side, if we assume that the pulp has been undergoing putrefaction more or less, involving the contents of the tubuli in the process, than we should agree with Dr. A. W. Harlan that a coagulant is contraindicated. In such a condition it would not be clinically safe, or compatible with theory to seal up the contents of the infected area.

In some cases, however, according to Dr. W. D. Miller, putrid pulps are found devoid of bacteria. They had been there and perished probably by lack of material to forage on, after having exhausted their supply of nourishment in the pulp ; or perhaps they died by the poison of their own excrement. At any rate, we should accept Dr. Miller's statement as correct, and that there are at least exceptional bad smelling root canals, where a coagulant would not be a *damning* quantity.

Indeed, it is always proper to avoid denouncing your brother's methods until you have, like the good old country doctor in Read's novel, "Put yourself in his place" ; and it follows in all reason, that it is rather too dogmatic for any one to lay down invariable rules for treatment of many sided diseases, and expect them to be observed by other practitioners equally as intelligent. This statement certainly applies to the treatment of root canals, which parts present conditions differing almost as much in degree as in kind and number. Slight differences of opinion, acquired by experience in the treatment of assumed similar cases, do not, it seems to me, involve a breach, much less a weak place in the scientific system on which our profession is erected ; on the contrary foundation principles in therapeutics are universally observed.

Thus we all agree that in the preparation of root canals for filling, a necessary operation, is the more than less complete removal of the broken down matter therein. This operation then, whether performed by aid of burs and drills and broaches only, or these combined with chemical agencies to secure cleanliness of the part, is a necessity ; but how we misunderstood each

other by misapprehension, for instance, of the uses in such cases, of disinfectants, germicides, and antiseptics? Disinfectants were in use long before the present doctrine of bacteriology was evolved, and were employed to destroy the infectious matter produced by certain diseases: but lately we have introduced another class of remedies the germicides, which, as their name indicates, are intended only to kill the germs, some brethren believing that if the germs alone are destroyed, and the living parts, as it were, thus sterilized, the other concomitants of the fermentative or putrefactive process are rendered harmless. In this idea, however, we are inconsistent for we endeavor to destroy also the products of the process,—even though we may not be personally acquainted with them,—such as the ptomaines, ammonia and its derivatives the amines, and phosphine, hydrogen sulphide, etc., from the canal.

For this latter purpose we employ agents, which at present we are pleased to term disinfectants. Now if we select different agents for this purpose, whether of active oxidizing or deoxidizing power, we accomplish our object without violating the rules of scientific therapeutics.

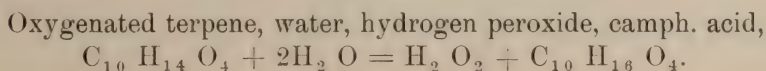
We have unconsciously come to regard the use of germicides *per se*, as of little consequence; that is, if we treat the part with disinfectants followed by *antiseptics*, and the sealing of all openings against the admission of culture fluids, we can expect the germs themselves, if any are still there, to remain in a state of innocuous disuetude.

Whether it be a root canal after thorough disinfection, if it required such treatment, or a simple cavity in a living tooth after the decayed matter has been removed, both being thus in a comparatively healthy condition, and therefore ready for the final operation of filling, is it not in accordance with both science and experience, that the part should receive, as a parting medication, an antiseptic, in order to barricade against future possible encroachments of the practically omnipresent bacteria?

Experiments have shown that bacteria, or even ordinary parasites, will not germinate in organized structure that has been fairly subjected to the influence of antiseptics; and in those cases of disease which require disinfection as a preliminary step, to be finally succeeded by an antiseptic, is it not a great convenience, aside from the question of non-coagulation, to have quite a number of drugs which combine in a high degree the virtues of both

disinfectants and antiseptics? We find such drugs in what are called the essential oils, thanks to Dr. Harlan for his persistent advocacy of them for this purpose.

Chemists have known from time immemorial that essential oils exposed to sunlight developed ozone. Indeed it is well known that the terpenes, $C_{10} H_{16}$, when exposed to the air absorb oxygen more or less, which they give up readily to oxidizable bodies; and experiments made by Kingsett seem to suggest that the oxidizing compound is a terpene, either isomeric or polymeric with oil of turpentine, $C_{10} H_{16}$, but oxygenated by having lost two atoms of hydrogen and taken up four atoms of oxygen, viz., $C_{10} H_{14} O_4$. This compound, in the presence of water and summer heat, is converted into hydrogen peroxide and camphoric acid. According to the equation,



Now whether we name the oxygen given off by hydrogen peroxide as ozone, or merely nascent, makes no difference; in either case we know it is active oxygen, the most determined enemy of infectious matter known to science.

Of the camphor compound, it is needless to say that camphoric acid is an excellent antiseptic, in virtue of its ability as well as the camphors in general, to prevent the growth of micro-organisms.

A few more words in order to sustain the caption of this paper. I have been asked quite frequently, why is carbolic acid an alcohol and not really an acid? Is it not because an organic acid is an oxygenated hydrocarbon radicle and hydroxyl? This definition necessarily implies at least two atoms of oxygen in the molecule, and as carbolic acid or phenol, $C_6 H_5 HO$, has only one atom of oxygen, it is relegated to the alcohols whose molecules are made up of hydrocarbon radicles and hydroxyl, and may contain one group, or two, or three groups of hydroxyl according to its kind.

The alcohols as a class are better antiseptics than are the corresponding organic acids; so the term phenol alcohol, applied sometimes apparently in division, instead of carbolic acid, need not, at least in this connection, be considered as a slur.

In conclusion permit me to call attention to the well known

fact, namely, the more rapid disintegration of zinc phosphate fillings at the cervical border when under the gum, than elsewhere. It is conceded that in that position putrefactive change of the surrounding debris takes place most readily, resulting in the development of organic alkalies, which take away the phosphoric acid to such an extent as to render that portion of the filling of uncertain value.

To overcome this difficulty I have been trying the addition of just a little carbolic acid—so-called—full strength, to the liquid at the time of mixing, and have found in the majority of cases so treated three or four years after insertion, a condition of stability most remarkable. Is this condition due to the presence of the antiseptic phenol alcohol? or were the cases experimented with favorable for the purpose? Ordinary cleanliness at any rate was not a factor in the, to my mind, remarkable presentation of the fillings. Try it.

ROOT AMPUTATION.

BY E. H. RAFFENSPERGER, D.D.S., MARION, O.

MR. S. presented himself with the following condition of affairs: From the posterior root of the left superior first molar, a discharge of pus had been noticed for several months. The pulp had been devitalized for several years and the cavity filled with amalgam. The gum around the tooth was perfectly healthy except where it bordered the above named root, here it had receded from the neck about 1-16th of an inch, and on pressure pus would come out from around the roots. As the patient did not care to lose the tooth, with a fissure bur I cut through the diseased root just where it joined the crown, and lifted it out of its socket with an excavator. The root was partially absorbed and bathed in pus. Where it was cut off it had been filled so no other filling was necessary. After dressing the stump down smoothly and treating the gum I discharged the patient; have seen him several times since, the gum seems perfectly healthy, no pus, and the tooth is sound, never the worse for having lost one of its three roots. I have no doubt but that many of the teeth now sacrificed could be saved by this very simple method.

IMPLANTATION.*

BY FRANK HART, D.D.S., TOLEDO, O.

My subject for this evening will be Implantation.

There have been a great many papers written on this subject, but as yet I have seen none that gave a detailed description of the operation, one that would justify the operator to undertake it without a more thorough knowledge of the minute points. The operation is one that any dentist with a little care and an anatomical knowledge of the parts should be able to perform. What might be called the mechanical part of the operation is little more than being able to bore a hole in a board to fit a plug. As no doubt there are some here that have never seen the operation performed, I will try to make it as plain as possible. I will first give you a short history of transplantation, replantation, and implantation.

Transplantation is the extraction of a tooth from the alveolar socket of one person and inserting it in the alveolus of another person in the socket where a tooth has just been taken from. This operation dates back into the sixteenth century. Cases are reported where ladies of the nobility had teeth affected with caries extracted and sound ones taken from their waiting maids substituted. Similar cases have been reported up to the present time but with a small degree of success. Some bad effects have followed this operation, which, no doubt, arose from the fact that the tooth and patient were not given proper anti-septic treatment.

By replantation is meant the extraction of a tooth and replacing it in the same socket. There has been very little written on this subject up to the present century, yet there is no doubt but that it has been practiced more or less for a number of centuries and with greater success than transplantation. The larger number of cases of replantation is where the wrong tooth has been extracted or removed by accident, and in most of these cases where the tooth has been replaced at once very good results have followed, in many cases even when the tooth has

* Read before the Northwestern Ohio Dental Society, at Toledo, May, 1890.

been taken entirely from the socket and at once replaced the pulp has retained its vitality, this has been fully proven to be true by afterwards drilling into the pulp chamber. There are many cases of replantation reported where the tooth has become firm in its socket and remained so for some time, the root then gradually absorbing away until the tooth would drop out. My replantation of teeth after extracting on account of alveolar abscess, phagedenic pericementitis, pyorrhœa alveolaris, or any disease that attacks the peridental membrane to any great extent, will show a very small per cent. of success.

By implantation is meant the insertion of a tooth extracted from the alveolar socket of one person into a socket mechanically prepared in the alveolus of another.

Implantation can comparatively be called a new operation. It was first performed by Dr. Wm. J. Younger, of San Francisco, on June 13, 1885, when he implanted four bicuspsids for a lady who had worn a plate for thirty years; one year from that time he implanted a molar for the same lady, she having used the bicuspsids for one year with perfect satisfaction. Dr. Younger has practiced implantation to a larger extent than any other one person up to the present time, although a great many dentists are now bringing the operation into general practice and with as much success as can be expected from any new operation. Some hold that the operation cannot be a permanent one, that in time the tooth will drop out. That may be true, but the same can be said of a gold filling or a crown or a bridge, or in fact of any step towards the reparation of the natural teeth. Should we say, do not put in gold fillings because they may come out in time? Do not set a crown it may come off in a few years? The facts are equally true in each case. Shall we condemn a poor unfortunate creature to the wearing of that most abominable and equally essential article called a dental plate? or shall we endanger the remaining teeth with a bridge? I say no; it is our duty to restore the mouth to as near the state that nature intended it should be as possible, and I hold that an implanted tooth is nearer to nature than any other method known. I have an implanted tooth in my mouth that was placed there by Dr. Kirk nearly three years ago; from all appearances it is in as good condition now as any time since it was placed there. I can say this for myself, that rather than wear a plate I would be willing to

undergo the operation once a year, but I think the tooth is good for many more years, and when it is gone, providing it does not last as long as the rest of my teeth, I shall have another to replace it. But to the subject. My idea in this paper is to try and make the operation as plain to you as possible.

We will first consider the tooth to be used. As you well know here is the draw-back to implantation, it is next to impossible to find incisors that are in good enough condition to use. Cuspids and bicuspid are more common. If you have any number to choose from get as near the size and shape of the patient's teeth as possible, the age of the tooth (that is, the length of time it has been out of the mouth) has very little to do with the success, providing the pericementum is in proper condition, in fact better results have been derived from teeth that were old and dry than from fresh ones. Care should be taken to get as straight roots as possible, the color does not matter as the tooth will become the same shade as the natural teeth or so near so that it is impossible to detect the difference without close examination. The tooth should be drilled from the apex of the root and filled with gutta-percha, the end of the root being capped with gold. If the root is long it should be cut off, but care must be taken that the end is well capped, care should also be taken not to destroy the pericementum any more than possible. The tooth must receive proper antiseptic treatment, and yet care must be taken not to destroy any latent vitality that may be in it.

Dr. Kirk has invented a very valuable apparatus called Kirk's sterilizer in which is used 1 in 500 solution of bichloride of mercury. It is so arranged that the solution reaches a temperature of between 95° and 105° , not above 105° . The tooth is left in the solution for ten or fifteen minutes it is then ready for the socket. In preparing the socket, a 50 per cent. solution of cocaine is injected. The reason that a strong solution is used is because the tissue that is most sensitive is the periosteum, and as that is a very dense tissue very little of the cocaine is taken up, therefore it is necessary to use a strong solution. The needle of the hypodermic syringe should be pushed well up into the periosteum. The cocaine should be allowed about ten minutes to take effect, the incision is made through the gum with a thin and narrow bistoury, there should be one-half of a circle of the gum removed with the apex towards the lingual margin, a strong

lancet with round surface is used to dissect back the periosteum, you then take a spear pointed drill with a movable shoulder with which you measure the length of the root of the tooth to be used, and place the shoulder on the drill so that it cannot go deeper into the bone than is wished, as in order to get the power to penetrate the bone it is necessary to use great speed with the engine and unless a shoulder is used on the drill much damage might be done. I would say here that the cord engines are the best to use as their power is much greater than the cable engine; after getting the depth of the socket with the drill you use the Rollin's spiral knives, these consists of different sizes so that by choosing the right size it will give you nearly the exact shape for your socket, now by trying the tooth in its socket it is easy to tell where it binds, the part should be reamed away with Younger's reamers, these also come in different sizes and cut only with the sides so that there is no danger from cutting too deep, care must be taken not to cut too much as the tooth must fit snugly and should be left a little long. After the socket is prepared it should be well wiped out to make sure that no fragments of bone are left, and then bathed out with the bichloride solution, the tooth is then pressed or driven well into place. In regard to the retention of the tooth, as the circumstances surrounding has so much to do with the case, it must be left to the judgment of the operator. In many cases where the socket has been made to fit the tooth well and the antagonizing teeth articulate directly upon it it will not require anything to keep it in place. Again, ligatures are required and in some cases bands or even plates are necessary. Where ligatures or bands are used care should be taken that they are kept free from the margin of the gum as they may cause a source of irritation. In most cases there will be very little soreness following the operation. The patient should be given a small phial of phenol sodique with which to bathe the parts until what little soreness there is departs. It was my intention to give the dangers to be overcome, but have had to cut the paper short for want of time.

THE CAUSE OF MANY FAILURES IN DENTAL OPERATIONS.*

BY L. P. BETHEL, D.D.S., TOLEDO, O.

TO TALK over ones failures and investigate or inquire into the cause of them is beneficial to every practitioner, especially in making him more careful about observing the little points in operating that help make up many of the failures in operative dentistry.

While, perhaps, already enumerated again and again they will yet bear repeating.

We often observe failures in gold fillings from not having solid borders to the cavity. These can be obtained only by the removal of all impaired tooth substance. It is not enough to merely remove the visible decayed portion for the tooth substance is generally softened more or less beyond this point and care should be taken to cut away all such softened structure. The treacherous white spots should be removed and the cervical wall cut down until thick and solid. There has been a tendency on the part of some operators to leave the borders thin or comprised mainly of enamel. At the cervical wall it is tapered to a sharp edge or a groove is cut entirely across and the border thus weakened.

In striving to oblige patients and have as little gold show as possible in the anterior teeth, many fillings are sacrificed by leaving a thin wall of enamel on the labial side. The lingual wall is often left a mere shell of enamel that will stand but a comparatively short time. These points are hackneyed to be sure, yet there are far too many operators at the present day who, through carelessness or other cause seem unmindful of them, yet they all predispose to failure and too much care cannot be taken in preparing the cavity for a gold filling. Over-malleting is undoubtedly injurious and improperly finished borders of the filling, especially the cervical, invite decay.

In using amalgam the same care should be taken to obtain solid borders and no wall be left composed merely of tooth

*Read before the Northwestern Ohio Dental Society, at Toledo, May, 1890.

enamel, for such walls after a time become friable under the amalgam filling and break down. The exclusion of moisture from the cavity when using amalgam I consider as necessary as for a gold filling, although many operators claim that in the packing of amalgam into the cavity the moisture is thoroughly expelled. To obtain the best results from these fillings much probably depends upon the mixing of amalgam and the means of inserting it. An amalgam should be used as dry as possible in most cases, and be thoroughly packed. I have contracted the habit of applying an excess of the material to both proximal and grinding surfaces, where admissible, to assist in drawing out the surplus mercury by pressure, and find that it leaves the filling more thoroughly condensed and solid at the borders. Neglect to finish the filling properly to the borders predisposes the tooth to decay. For cutting away the excess of amalgam and finishing the filling on the proximal surfaces of the teeth, the composition silver strips of Dr. E. Parmly Brown answer the purpose admirably. They will readily pass between the teeth and are so pliable that when used as a tape they conform to the shape of the tooth and remove all excess of the filling material leaving smooth edges.

I believe a mistake is often made in beveling the borders of a cavity for amalgam, especially where a brittle edge alloy is used, yet some operators persist in so doing. Another cause of failure we sometimes find where the cavity has previously been filled with cement and some portions left adhering to the borders to dissolve out and invite decay. To guard against this I have found it advantageous, when using cements for temporary purposes, to fill almost to the borders, where they have been cut down to the proper shape, and finish the filling with gutta-percha, or when using the cement alone, to remove all decay from the cavity leaving the borders to be shaped when the cement is removed. I seldom use a matrix in filling with amalgam as I believe in most cases a better filling can be made without its use.

There are so many cements on the market that it is difficult to give a general rule as to mixing to obtain the best results. Some require mixing thick and then softened by rolling between the thumb and fingers, while others will not stand this manipulation. The peculiarities of the cement one uses should be thoroughly studied. Probably, however, the best general results are obtained

from mixing the cement as thick as it will work well, thoroughly incorporating the powder. Probably many failures in cement fillings come through using the material too thin; the acid crystallizing in a freer state thus rendering it more easily attacked by alkalies, neutralized, and the bond of union, with the powder, broken down. This seems to be especially liable to occur at the cervical borders of proximal fillings, where the fluids of the mouth are held between the surfaces or under the free margin of the gum. Another cause of failure of these fillings, especially at the cervical border, is in permitting minute portions of foreign materials such as blood, debris, or even a slight trace of moisture, to remain on the borders of cavities, for they make the filling imperfect at that point. It seems to me that if proper precaution is taken in manipulating and filling with these materials they can be made to last longer and do better service.

Failures in root fillings are probably due more to filling before thorough disinfection has been accomplished, but a root may be thoroughly disinfected and prepared yet filled in such a manner as to allow secretions to gradually accumulate in the canal and there decompose, lighting up the old trouble at the apex. This comes generally through faulty manipulation, although sometimes, perhaps, through carelessness in applying medicaments before filling that are incompatible with the filling material. For instance, if the cements are used the root should not be wiped out with any of the oils but bichloride of mercury and such antiseptics are preferable. In using gutta-percha, oils may be used for they are compatible with this substance. Whatever material is used for the filling, should be thoroughly adapted to the root walls and this requires time, patience and *thorough* manipulation.

Lastly, I may add that far too many failures of fillings come through the neglect of patients to keep the teeth brushed and the mouth properly cleansed.

These are but a few of the many little points that should be thoroughly observed in operating, but enough perhaps to provoke discussion.

IMPLANTATION—A SINGULAR CASE.

BY F. E. BATTERSHELL, D.D.S., NEW PHILADELPHIA, O.

Two superior and four inferior incisor teeth on gold plates were worn by Mr. W. O. Blank, banker, aged 60 years; fit good but could not wear them continuously as mucous membrane was hyperirritable. Both dentures were hurriedly placed in an old coat pocket, through which they made their exit to *terra firma* and were never recovered.

Filled the space for the four inferior incisors with a bridge which he wears with comfort. The upper denture had filled the span for the left central and the first bicuspid, the latter space much contracted concluded to ignore the bicuspid space and fill the anterior vacancy by implantation. Accordingly found a tooth of the kind and nearly the size desired; prepared it in the usual manner, and reduced length of crown to make it correspond to left central. Two gold bands were then made and fitted, one to this tooth and one to the right lateral in the mouth. Being in readiness now to insert the tooth it was left in a bath of mercury, bichloride solution, and an opening for the socket made in the alveolus. Although cocaine and chloroform were employed to control the pain, yet, owing to the age and irritable temperament of the patient, the opening was only completed about two-thirds of the depth to admit the full length of the root in the alveolus. The reduction of this obstacle with the final success of the case, is that to which this description aims to call attention.

The tooth with its band *in situ* was inserted into the incomplete socket and around the band and through a loop previously attached with solder to the labial surface, linen ligatures were passed and made fast to the adjoining teeth; the binding cords thus snubbing the tooth upward with a good strain. Instructed the patient to rest a convenient thumb or finger on the tooth when leaning upon his elbow to read or count or discount, and to use freely tr. myrrh and phenol sodique for astringent and antiseptic effects. Saw the patient every day and applied dilute tr. iodine several times to reduce inflammation.

After the expiration of about a week absorption, the result

of the pressure, had accomplished what could not be completed by drilling, and was attended with no pain and but little inconvenience.

The tooth was held in place for a few weeks with ligatures, which were then removed, and the gold bands to replace them were attached *in situ*, soldered together, and cemented in position upon this central and the right lateral. The bands held the tooth firm for about three months when they were removed. It seemed a relief to the tooth to be free; the attachment was unyielding, and now after ten months use the tooth seems to have secured a title in *fee simple* to the place it occupies.

SYPHILIS IN THE MOUTH.*

BY J. E. GEIGER, D.D.S., POMEROY, OHIO.

THOUGH more properly belonging to the province of general medicine, still syphilis in several of its manifestations is of vital interest to the practitioner of dental surgery.

The fact that the poison or virus of the disease is of so powerful a nature, and its transmission from one patient to another being easily accomplished through the use of an imperfectly disinfected instrument, should present to the mind of every conscientious practitioner the absolute necessity of a thorough knowledge of the forms of the disease, which in the course of his career may come under his notice.

Syphilis as it presents itself in the mouth is usually secondary in character and the result of constitutional syphilis. However, it occasionally occurs in the initial form as the result of kissing or transmission by other means.

For instance, one author speaks of a case in which twenty persons were affected by initial syphilitic ulcers in the mouth, the source of which was finally traced to a cigar maker, afflicted with secondary ulcers, who was in the habit of biting off the ends of his cigars as he made them.

These sores are usually superficial in character and discharge little pus and are but slightly irritating. They commonly appear

* Thesis submitted to the Faculty of the Ohio College of Dental Surgery, Cincinnati, O. Session '89-'90.

on the top or side of the tongue or on the tonsil, and are accompanied by tumefaction of the glands of the neck.

When ulceration of the tonsil occurs the gland has an appearance of redness and swelling without apparent inflammation, the severity of the symptoms then increase accompanied with induration and ulceration, while a grayish white coat spreads itself irregularly over the ulcerated surface.

Secondary syphilis, the form of the disease which the dentist is most likely to meet, appears in the mouth in three forms.

First, *erethema* or acute syphilitic angina; second, *papules*; third, *gummata*.

Acute syphilitic angina resembles somewhat the ordinary catarrhal inflammation of the throat and its diagnosis depends on the history of the case with the catarrhal symptoms.

Papular eruptions vary in form according as they are developed from normal *papillæ*, or result from the infiltration of the follicles. In the former case they constitute firm elevations resembling small warts; in the latter they consist of roundish, irregular shaped nodules.

The parts most frequently affected are the arches of the palate, the tonsils, and the inner surface of the cheek. These structures are painful and swollen before the *papules* appear, but the latter may sometimes be formed in the absence of any other local symptoms. If the inflammation be of a diffuse character the *papules* may be scarcely recognizable. They are as a general rule conspicuous and often confluent on the velum and anterior arch of the palate. As the case proceeds the *papules* may disappear by resolution with some amount of superficial disintegration in which the epithelium is converted into opaque, grey patches. Superficial erosions, or even ulcers, are often caused by the detachment of these patches, and when the *papules* are confluent, ulcers of considerable size may be thus originated. Such ulcers are frequently seen the tonsils and they give rise to much pain, swelling and difficulty of swallowing. The ulcerated surface is also covered with more less epithelial debris, the decay of which communicates a foul odor to the breath.

Gummatous nodules or tubercles are developed in several parts of the throat, but the hard and soft palate, the uvula and tonsils are the most frequent seats. These growths belong to the last stages of syphilis and their development is attended with

little or no pain. At one or more spots a small nodule makes its appearance or the mucous membrane becomes redened or thickened over a small portion of its area. Molecular disintegration with ulceration follow. These ulcers give rise to serious results, the soft palate is often perforated with necrosis and loss of hard palate and adjacent bones. In the diagnosis of these lesions, much depends on the evidences of the disease to be found on other parts of the body. Among these are the eruptions to be found on the neck or the scars remaining after such eruptions have healed.

The history of the case should be carefully traced where possible. This is often rendered difficult by erroneous and misleading statements of the patient. The absence of any other disease gives good grounds for thinking syphilis is present. When any uncertainty is felt, however, the surest and best method of diagnosis is in the yielding of the disease to specific treatment. The specific commonly employed, and one before which the disease readily gives way, is mercury. One grain of calomel to which is added one-twelfth grain of opium may be given night and morning until the ulceration disappears or the gums become tender. Corrosive sublimate in one-twelfth grain doses may be given three times a day, and in secondary syphilis is considered by some superior to calomel. In inflammation of the throat the inhalation of steam will do much to allay the pain. Ulcers on the tongue are sometimes cauterized with nitrate of silver. In the treatment of this disease the infectious character must be constantly kept in mind and every necessary precaution taken to disinfect thoroughly any instrument that may be used.

THE THIRTIETH ANNUAL MEETING OF THE AMERICAN DENTAL ASSOCIATION.

THE meeting was called to order in the Opera House at Excelsior Springs, Mo., Tuesday morning, August 5th, 1890, at 11 o'clock, by President M. W. Foster. The officers present were President, M. W. Foster; 1st Vice-President, A. W. Harlan; 2nd Vice President, J. D. Patterson; Rec. Secretary, Geo. H. Cushing; Treasurer, A. H. Fuller, and seven members of the Executive Committee.

The roll was called and the reading of the minutes of previous meeting by vote was dispensed with.

Dr. F. H. Gardiner, of Chicago, read the following resolution and moved its adoption:

WHEREAS, There is to be a world's Columbian exposition in Chicago in 1893; and

WHEREAS, In consequence of the fact that the choicest products of the world are to be there displayed, it is expected that citizens in large numbers of all civilized countries will be gathered together there for the purpose of seeing these exhibits; and

WHEREAS, It is to be presumed that many dentists from foreign countries will visit the United States at that time; and

WHEREAS, The time of the exposition will be an opportunity for a great meeting of dentists of the world; and

WHEREAS, It is believed that a great advance in the science and practice of dental and oral surgery would result from a meeting of the dentists of the United States with those from foreign countries who might then be visiting this country; and

WHEREAS, It is desirable that any meeting then held should be at the instance of the American Dental Association and the Southern Dental Association, and organized by a joint committee by them appointed; therefore be it

Resolved, That the president of this association appoint a committee of five, to confer with a like committee appointed by the Southern Dental Association at its last meeting upon this subject, and that this joint committee have power to fill all vacancies, and shall add to its membership either one, three, or five more members as it may deem advisable; and when this committee is so completed it shall be clothed with full power to take such action as it in its judgment may deem best for creating an organization for the purpose of holding a dental meeting in Chicago in 1893, which the reputable dentists throughout the world shall be invited to attend, and that any action that this committee may take in the premises shall be final and binding.

The motion met with a prompt second, and as soon as it was stated by the President a lively discussion ensued.

Dr. Allport stated that at the last meeting of the Southern Dental Association a similar resolution was adopted, and a committee was appointed to present the matter to this association, and that committee was present and ready to present the resolu-

tion of the Southern Association, and he thought it would be decidedly discourteous to adopt the resolution of Dr. Gardiner.

After considerable discussion a motion to lay the matter on the table carried, and Dr. Carpenter, of Atlanta, Ga., was called upon to present the resolutions adopted by the Southern Dental Association. The resolutions, which were handsomely engrossed on parchment, were duly presented and read by the Secretary. In substance they were the same as Dr. Gardiner's. On motion the resolutions were received and unanimously endorsed, and the President instructed to appoint a committee of five to confer with the committee from the Southern Dental Association.

The following committee was appointed: L. D. Shepard, of Boston, Mass.; W. W. Walker, of New York City; A. O. Hunt, Iowa City, Iowa; H. B. Noble, Washington, D. C.; G. W. McElhany, Columbus, Ga. The committee appointed by the Southern Dental Association is as follows: Drs. J. Y. Crawford, Nashville; John Storey, Dallas, Texas; L. D. Carpenter, Atlanta, Ga.; Dr. Barton, Paris, Texas; C. E. Stockton, Newark, N. J.; J. Taft, Cincinnati. Elected by the joint committee: Drs. M. W. Foster, Baltimore, Md.; H. J. McKellops, St. Louis, Mo.; A. W. Harlan, Chicago, Ill. W. W. Walker was elected chairman of the committee, A. O. Hunt, Secretary, and J. S. Marshall, Treasurer.

The animated discussion following Dr. Gardiner's resolution was intensified by a communication, read by the Secretary, from the S. S. White Dental Manufacturing Co. The communication, which was somewhat lengthy, referred to the paper read by Dr. Louis Jack at the Saratoga meeting last year on "Independent Dental Journalism," and especially to the remarks of Dr. W. C. Barrett, who, in discussing this paper, characterized the arrangement between the association and the S. S. White Dental Co. whereby that company was given the privilege of publishing in the *Dental Cosmos* the papers read before the association, to the exclusion of other journals, as "dirty work" and "managed by the politicians of the association." The communication gave at length a full history of the manner in which the agreement was brought about, the terms, etc., and asked that the matter be investigated in order that the S. S. White Dental Manufacturing Co. be cleared from the charge of underhand dealing in this matter and the integrity of the officers of the association be vindicated. A very excited discussion followed, in which it was

shown that the arrangement had been entered into at a time when the publication of the proceedings caused the association considerable financial embarrassment, and was purely a business contract that had been honestly made and faithfully consummated by the interested parties, and there was no reason why any one should complain. There seemed to be a feeling that it was beneath the dignity of a scientific body to have business relations with a commercial enterprise, and that the association should control its own work and publish its own proceedings independent of dental supply houses. A motion prevailed to have the President appoint a committee of three members of the association to investigate the matter referred to in the communication for the purpose of ascertaining the historical accuracy of the statements contained in it. Drs. W. X. Sudduth, H. A. Smith, and Geo. H. Cushing were appointed as the committee, who subsequently reported that they found the statements were correct and that all the transactions of the S. S. White Co. had been fair and honorable, and recommended a continuation of the present arrangement for publishing the transactions. The report was by vote received and adopted; but at a subsequent meeting of the association the motion to adopt was reconsidered and the part referring to a continuation of the arrangement expunged. It is reported that another supply house conducting a journal would print the papers and proceedings this year, but up to date no arrangement has been made.

The chairman of the executive committee reported the programme for the meeting. The chairman of the publication committee made a financial report, and the chairman of the committee on credentials made a partial report, all of which were adopted.

By a unanimous vote the visiting members of the Southern Dental Association were invited to participate in the discussions and accorded the privileges of the meeting.

Resolutions of sympathy were adopted for Drs. W. H. Morgan of Nashville, Tenn., and E. T. Darby, of Philadelphia, both regular and honored attendants on the meetings of the association, but because of serious illness were prevented from attending this meeting.

Dr. A. W. Harlan took the chair and introduced President M. W. Foster, who read his annual address, of which the following is an abstract:

The address referred to the great variety in the dental laws of the several States. All but five of the States and Territories and the District of Columbia have dental laws, each with its own peculiar requirements for admission to practice.

We have laws that compel graduates as well as non-graduates to submit to an examination; some that recognize the diplomas of reputable dental colleges; others which permit only graduates to be examined, excluding all non-graduates; and a few that compel all applicants whether holding a diploma or not (except a medical diploma) to submit to an examination.

It is not just that men who have spent time and money in a regular college course should be subjected to the same conditions as those who have never taken such a course, but have gained the experience or knowledge through an office pupilage, or perhaps may have never had either. Such laws are not only a reflection on the work of our colleges, but make it possible for men to enter with very meager preparation, and the tendency will be to fill our profession with men who have no scientific knowledge upon which to base their practice. The laws that discriminate against the non-graduates may sometimes harm very worthy men. In this day there is not often any excuse for a man entering the profession by any other way than through the colleges, but there are many excellent men, practicing to-day and highly honored in the communities where they live that would have to get a diploma to be allowed to practice in some of the states were they to remove to them. The laws that admit only graduates to their examinations, seem to favor the colleges, but in reality they cast a slur upon the diplomas of all colleges by subjecting those who hold them to a re-examination before permitting them to practice. The inference is that state examining boards are likely to have more wisdom or be more virtuous than the college faculties. Such is not likely to be the case when we consider the way in which the state boards and the college faculties are selected.

The remedy is in such a unification of the various State laws as will place the granting of diplomas in the hands of a combined committee composed of the State Boards and college faculties in the various States where the colleges are located, such diplomas would then admit to practice in any State of the Union and be respected abroad.

The address recommended that the profession petition Con-

gress to appoint dentists with suitable rank and pay to the army and navy, wherever there are sufficient numbers of either to justify such an appointment.

It was suggested that the profession endorse the practice of taking impressions of the teeth of criminals for purposes of identification. It advised the establishment in Washington, D. C., of a dental headquarters with a national museum and library in connection therewith. The advantages of such a library and museum would be incalculable, and its position at Washington would give it the advantage not only of a central location, but the various museums and libraries of the national capitol would be available in many ways and possibly aid could be secured from the national government for its maintenance.

The address referred to the influence of the Association in inducing the National Faculty Association to extend the course of study in the colleges to three years. It would be well for the association to give the colleges that moral support that will make a high standard of attainment the qualification for graduation rather than a period of time study. On motion the various recommendations of the address were referred to the section on Dental Education for discussion when the section made its report.

The evening session was called to order at 8 o'clock by President Foster. After transacting some miscellaneous business, the Treasurer's report was read showing a balance in the treasury of \$1,368.77, after expending \$1,739.81 during the year.

The next business was the report of sections. Sections V, VI, VII, I and II were called, and Section II, Dental Education, Literature and Nomenclature being the only one prepared to report, Dr. C. N. Peirce, the chairman, reported that Dr. Atkinson would read a paper on Education, Nomenclature and Terminology. Dr. A. H. Thompson a paper on Scientific Instruction in our Colleges. Dr. Rodrigues Ottolengui on How to Inaugurate a National Dental Degree. Dr. Chas. B. Atkinson on Education and the Obligation Involved, and the chairman would make a report for the section.

Dr. Thompson's paper was a plea for more scientific instruction in our colleges, as opposed to what is popularly, though erroneously, called practical teaching, in which methods of practice are given preference over scientific training in the fundamental principles governing these methods. The tendency of all

such teaching is to commercial rather than a scientific basis. This effort to exclude science for methods of practice that are oftentimes utterly unscientific is not education at all, and is debasing not only to the noblest qualities of the mind, but to science itself. Pure science should be taught in our colleges not only for its value in the practical realm, but for its ethical value to the students. If the practical system of education, so well exemplified in the old system of office pupilage, is the best, why not return to it and abolish the college system?

The colleges are so organized and conducted as to happily combine the scientific and industrial ideas of education, but we must not allow the industrial to consume the valuable time that a college course affords for the acquirement of a knowledge of those sciences that make the basis of our profession. The contemplated extension of the college course will provide a grand opportunity for a thorough teaching of the fundamental sciences, and the friends of true education should be watchful that the opportunity is not dissipated by allowing an undue amount of time to be devoted to the mere practical. A systematic graded course of study is now practical, which will result in a better educated class of graduates than was possible under the shorter course. The great difficulty has been that the men entering our profession have been admitted with too meager general education, and the college work has consequently been more difficult and less fruitful in high attainments. Simplification the first year, precision the second and amplification the third should be the key-note to the extended course.

There will be a demand for a new set of text-books. The first year books should be brief and simple, but sufficiently comprehensive and exact to admit of a clear statement of rudimentary science; those of the second year more ample; while those of the third should be broad and comprehensive.

The teachers should be capable and skillful, and should devote their whole time to teaching and investigation. The busy practitioner, however, competent as a practitioner has no time to prepare to meet a class and impart important scientific truths in a clear and intelligible way so that the average student will be able to grasp them.

The new State laws, that compel graduates to pass an examination before they can practice in those States, may result in

giving more attention to the practical branches than ought to be given, at the expense of the scientific; for these examining boards will be composed of practical men, and they may not be scientific. Before such a practical board a scientifically educated man might appear at a disadvantage.

The friends of scientific education in our colleges must be on the alert that the practical man may not overload the curricula of the new course with practical work to the exclusion of the already difficult scientific.

Dr. Louis Ottofy read a paper written by Dr. Chas. B. Atkinson, of N. Y., on Education and the Obligations Involved.

The paper advocated the teaching of methods that were generally practiced and not the pet methods of individual teachers, on the principle that every man thinks his baby the handsomest although it may be as homely as a week old gosling. The best methods only should be taught, especially in the practical departments.

There should be uniformity and harmony in the teaching. The course should be so graded and divided that each teacher should complete his particular part and the work of one teacher should so harmonize with that of the others as to make no confusion in the minds of the students. If this is not practicable the work should be definitely divided so there shall be no conflict of teaching.

Dr. Ottofy read a paper written by Rodrigues Ottolengui, M.D.S., of N. Y., entitled, How to Inaugurate a National Dental Degree.

The writer maintains that the degree, Doctor of Dental Surgery, does not represent the standard of professional attainment that it should, owing to the facility with which the dental colleges confer it. He thinks that money is too much of a consideration in determining the qualifications of candidates for the degree. This results from the fact that the salaries of the teachers are dependent upon the size of the class. The remedy is to deprive the colleges of the right to grant diplomas and place it in the hands of a National Board of Examiners, making the present colleges merely educational. Then have a National Examining Board of twenty members, appointed under a special charter from the United States government, appointed from as many districts of the United States, who shall examine candidates and

confer the special degree of Doctor of Oral Surgery. This board shall hold annual meetings and confer degrees on all candidates that are worthy, whether they have a college or office education, it matters not, so they possess the requisite knowledge. A fee of from \$20 to \$30 should be paid by each person taking the examination, and this money should go into the treasury of the board to meet the expenses. The plan also provides for an emergency where candidates are unable to attend the annual meeting of the board, they can take their examination from the nearest member and have it acted upon at the full board meeting subsequently. The writer thinks that the new degree would in a few years become so popular that the colleges would seek to have the board examine all their men and confer this degree, and then it would be an easy and simple matter to inaugurate a National University or system of dental education. There should be no reiteration of lectures from year to year, a new set of lectures should be prepared each year or at least revised and brought up to date. In order that a better educated class of students may be secured, the paper advised that the local society appoint a committee to examine all applicants for admission to colleges in its respective territory.

To be continued.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

SIMPLE METHODS.

BY PROF. L. P. HASKELL, CHICAGO, ILL.

It does seem strange that so many dentists cling to methods of work that are cumbersome and difficult. As an illustration take the use of zinc for dies. It is not reliable; it is difficult to use; it does result in annoyance and worse than all, *mishaps*.

And still the students in most of the colleges are put through the ordeal of making zinc dies, no matter if they have previously been instructed in and realized fully the benefits of the simpler

methods of Babbitt metal—and recently the JOURNAL published an article upon the making of zinc dies, which demonstrated that the author fully realized the difficulties of using this metal.

I do wish I could make dentists comprehend that the making of metal plates is simplified to a remarkable extent by the use of Babbitt metal dies and *oiled* sand. If any dentist will call upon me at any time, I shall be pleased to show him a large collection of models, comprehending almost everything that ever was seen in size, shape, and condition of alveolar border and palatal surface and 90 per cent continuous gum cases, without any vacuum-cavities, and all made upon Babbitt metal dies. Each plate when swaged fitting the model, and the mouth; no adjusting with pliers and burnishers; if further evidence of the value of these dies is needed, I do not know what it can be.

I must emphasize however, that what is sold as Babbitt metal will not always answer the dentist's purpose. There are many formulas, some in which *lead* is substituted for tin, in order to cheapen it, but ruins it for dental use.

If any one wishes to make it for himself, the following is the formula: Copper 1 part; Antimony 2 parts; Tin 8 parts, and remember to *melt in the order named*, otherwise the tin will oxidize badly.

Now *pure lead* cannot be used for the counter die because it melts at a higher temperature than the die. Reduce the melting temperature by adding tin. Make it 5 parts lead and 1 part tin.

I have instructed hundreds in these methods and have yet to hear of the first one who has returned to his "wallowing in the mire" of zinc dies.

Since writing the above I have noticed in the JOURNAL for June, an article on "Swaging Plates," taken from the *Texas Journal*, and it is so apt an illustration of the subject, I desire to call attention to it. Were it a necessity to follow such a plan I should want to quit making metal plates.

The first thing the writer does is to take "three or four impressions"!! Well, my patients think *one* impression is all they wish to endure, and it certainly is enough if that is a correct one.

Then he furnishes a formula for a composition for impressions that will enable him to cast his dies in them, instead of moulding sand, "on account of the difficulties of sand moulding." I wish

I could have this writer in my laboratory for ten minutes only, and show him how the "difficulties of sand moulding" would vanish. Then comes the *zinc* die again, and follows up with a *zinc counter* for the *final* swaging. Did he ever think for a moment of the result of using both die and counter of the same metal, and especially of zinc? As the counter does not yield any more than the die, the gold, being softer than either, must give way at prominent points, and tear or so near to it as to be very thin. But there is not the slightest necessity for resorting to such measures. The plate will come to its bearings with the ordinary counter. In the use of Babbitt metal dies, and the lead and tin counter I never find it necessary to make even a second counter.

BRIDGE-WORK.

DR. SHRIVER: For my bands I use coin gold alloyed with platinum.

DR. THOMPSON: What kind of coin?

DR. SHRIVER: Red coin preferably, with about two grains of platinum to the ounce, and for the cutting or grinding surface of the tooth, I alloy all I can to make it hard enough that it will not wear. I flow that up with coin gold, so I don't have anything except platinum and coin gold in the work at all until I come to solder it the last time when I use one hundred carat solder. I do not use any solder on the bands until I come to put the work together, and when I am ready to make my last solder I use twenty carat solder. I try to fill all joints so that there will be no crevices or anything of that kind. The idea of using platinum with gold makes it very safe in working. There is very little danger of melting. You can put it under a blow-pipe as though you were going to shoe a horse. I have had no trouble in melting.

DR. HUNGERFORD: I do not know that I can add anything to what Dr. Shriver has said. I do some bridge-work. I get my individual pieces just where I want them with the caps set in position, and the whole thing introduced, and catch everything in all directions, and with large pieces of solder I fill all up full and flush so that there are no cracks or crevices at all. It only makes one soldering and is less trouble. I never could see the use of fixing up each tooth. I have one criticism that I think is

important; and that is the adjustment of the bands to the gum margin. If they only come up to the gum margin there will be a collection of food there. I have never seen a case where the band did not go under the free margin but what the teeth began to get very sensitive about that point and eventually decayed. But by putting the band slightly under the free margin, that is at once avoided. It is a very nice operation to adjust the band so that it will exactly fit under the margin the same on each side, anterior and posterior. I certainly would not adjust a band just to the margin.

You sometimes see notices from professional men that they will construct bridge-work for their patients from plaster casts. I do not think it possible that a bridge was ever constructed from a plaster cast that was a fit. The plaster cast does not show the cervical margin of the tooth well. These bands must go under the free margin, and I think it is not possible that a bridge could be constructed from a plaster cast. I do not see the object of making molded cusps. It is three or four times as much labor as it is to make a swedged cusp from a thin nice piece of 22 carat gold, you can swedge out a great many in a short time, and with your blow-pipe or gas jet fill with solder, and you can leave them slightly concave. If you have a moulded cusp, it must be ground or it don't fit at the top of the tooth. You don't get a good adjustment unless you grind it away considerably. It is a difficult thing, and I don't see any special advantage that can possibly be derived from it. I have never seen many bridges except those I have constructed myself with the gold cusps that covered each individual tooth, and soldered together.

DR. MORRISON: I have made some crowns in my day, and also bridges. In the construction of crowns, I am sorry to see so many ways of doing the thing that are not the shortest, and I feel, the better ones. In a very few words I will attempt to tell you my method, and it has been one of the original ones. It is to construct the band to fit the cervical margin of the tooth accurately, leaving it long enough to come to the occluding tooth perfectly. I take an impression for all crowns or sections, at one and the same time in plaster-Paris, and fill that in and make a plaster model. After I have fitted the band to the model, I fit it in the mouth accurately, closing it in at the cervical margin. Then I take some coin gold, if you are making them all coin, (I

prefer them about 23 carat, which is one carat below pure gold) and I make a thin impression with a metallic gray iron die. I will just describe the method of getting crown faces. Just take these teeth from your matrix and apply them to the wax, and make a needle about an inch and a half long, stick them in it, and send these to any gray iron foundry and they will make bicuspsids, molars, canines, and make any number of them, and will charge you forty to sixty cents a pound; and these teeth come to you just perfect models, and they are more perfect and delicate than any you can produce at random by a zinc die. These are finished up a little with a file to correspond with each case you want, and you will also find that they can be used over a great many times. You stamp your crown, fit it, and then allow it to come to the free margin of the gum and stick it into place with a very small amount of solder. I am surprised at the amount of solder used among dentists. I use solder not to exceed in size one-half of an ordinary pin head in the construction of an ordinary crown. After your crown has been stamped and fitted on correctly to the natural tooth, and it is soldered around the edge with a high order of solder (the highest possible should be used for such gold) then you put it on your plaster model and articulate, and if you have a patient in the chair you can use it, and have the natural teeth for the articulation. There is where you get complete articulation without grinding.

When it is adjusted to a complete fit in the mouth you take it off. I use platinum as mentioned by Dr. Shriver; that is platinum with so much gold that it is very hard, but it is very difficult to roll it—it rolls almost like steel in the rolling mills. I cut that up into small squares, of about one-sixteenth of an inch, and about 23 or 24 gauge plate thickness, and make a regular McAdam of it and keep it in a compartment by itself in the solder drawer. Instead of making different thickness on the occluding faces, I make these faces as near the thickness of an ordinary nickel as possible, leaving that edge gold where the occluding teeth are to come against and wear. I used to make them of one thickness, say about a dime in thickness, but I make them much thicker now, and as years go by I increase the thickness, because I see the necessity of it. Now, I put two crowns in position and take a plaster impression of their articulation. These crowns have been fitted one at a time until they occlude perfectly, and I put

them in position, and their cervical fit and adjustment holds them perfectly. It is very difficult to get them off. Of course you cannot use a pair of forceps without crushing them, but you can slip them off.

I construct the bridge with a gold, or iron angle as a support for the bridge. I take thick platinum about 24 gauge plate, or rather take two strips and solder the edges together. I solder the two crowns and adjust the iron angle, cover this with rubber and vulcanize.

QUES.—You rest the rubber tight to the gum?

ANS.—Yes.

QUES.—How much surface is in contact with the gum?

ANS.—Quarter of an inch many times, and it is left there permanently. With regard to unpleasant results, I have never observed any.

DR. HUNGERFORD: It seems to me that the bar would bend out of shape.

THE SPEAKER: Yes, but remember that the bar is entirely enveloped in the rubber.

DR. HUNGERFORD: Yes, but what I mean is that unless these bars are excessively heavy their position would be changed, in trying them on you will have to bend them.

THE SPEAKER: I said the bars were from 22 to 24 gauge, and I first solder one edge to the other, and the ends of them are accurately adjusted to the crowns before the heat is applied.

DR. HUNGERFORD: One is placed perpendicularly, and the other laterally?

THE SPEAKER: Yes, just like angle irons in a building.—
Trans. Kas. So. W. Jour. Report.

THE SETTING OF PORCELAIN AND OTHER CROWNS.

THE Bonwill crowns are sufficient to meet the requirements in a large majority of cases, and their construction and method of attachment have been frequently explained by Dr. Bonwill. There are some additional points, however, which, I think, may well be considered. After the root is prepared, to prevent splitting it, a small groove should be cut around the canal, between it and the cement, which, when the pin is adjusted, the root filled, and the crown pressed to place, will solidly fill with amalgam and support the root on all sides.

If it is a root in the anterior of the mouth, the exhibition of a discolored joint may be prevented by placing a small quantity of light-colored gutta-percha, softened by heat, around the edge of the concavity of the crown, and at once adjusting the crown. A tight joint will thus be made, which will prevent the showing of the amalgam externally. Any excess of gutta-percha which may have been forced out should be trimmed off flush with the root and crown.

If a case presents where decay has progressed to such an extent as to leave only a funnel-shaped cavity, and but little substance for retaining the pin near the apex, a thin platina band should be placed around the root, with a strip from it, to be turned and burnished into the cavity, to prevent the band from slipping beyond the edge of the gum. Then close the foramen, select a small probe—a Gates canal-drill with bur broken off answers well—and insert it in the root and pack amalgam around it; using either the Bonwill or the electric mallet to work the mercury well to the surface, removing the mercury with a piece of bibulous paper, and so manipulating the amalgam as to have it hard by the time the filling is completed. Then withdraw the probe; this leaves a canal that answers well as a guide in drilling. You now have a root almost as good as if it had not been injured by decay, and the operation can be continued after the usual method.

When the root is perforated in one or more places, I use a piece of platina foil, cut into a shape that may be adapted to the walls of the canal, as a lining. For success in the use of these crowns, it is important that an amalgam of great strength be used; for, with inferior amalgam, the permanent building up of badly disintegrated roots is impossible. Low grades of amalgam are also subject to discoloration, which may be apparent through the porcelain, and they are therefore objectionable.

Experience has satisfied me that the attachment of these crowns to roots with amalgam, and a pin whose surface will amalgamate, is the strongest method that can be used; and so great is my faith in it, that I take advantage of the mechanical principle in building contour fillings of amalgam in bicuspid and molars.

Sometimes the articulation will not allow a porcelain crown of sufficient strength to be used. The inferior lower and upper

laterals frequently have roots so small as to prohibit the adoption of this method. For the roots of such teeth I prefer a platina and iridium pin for the canal. A gold collar is made to fit around the root and beveled on the labial surface beyond the free margin of the gum. A gold plate soldered on the beveled surface of the collar makes a cap for the end of the root. Adjust the cap on the root, select a suitable plain plate tooth and back it with gold, fitting it on the cap and attaching it with rosin and wax. Remove the tooth and cap; invest and unite with solder. After polishing the piece, attach it to the root with oxyphosphate of zinc.

For the roots of bicuspid and molars, a very permanent crown can be adjusted by making a cylinder of gold to fit the root, and allowing a filling of amalgam to extend from within the root through the cylinder; using a composition pin to strengthen the attachment.

Gold crowns can be adjusted in the same manner as the porcelain crowns, and a beautiful operation can be made, the amalgam being entirely hidden from view. A crown of this description is made by taking a ribbon of coin gold, number twenty-eight American gauge, and forming it into a cylinder shaped at one end to fit closely the root. An articulating face is made by taking a piece of gold plate, wider than the diameter of the cylinder, and placing on it small, square pieces of gold, making pyramids according to the number of cusps required. The plate is held in the flame of a blow-pipe, to solder the pieces together and to the plate, using an eighteen-carat solder. Now flow a solder of a lower carat on the opposite side of the plate, place the cylinder on it, and again hold in the flame till the solder reflows. The excess of gold is cut off, the cusps filed to their proper shape, the crown polished and filled with a plastic.

After the plastic has become hard, concave the base, drill the number of holes needed through the crown to its articulating face, and countersink the holes. The crown is now ready to be attached to the root. If, when adjusting the crown, any difficulty is experienced on account of the pins not adapting themselves, the holes can be made larger with a bur. After the crown is adjusted, the amalgam on the articulating face can be cut away and gold filled in its place, making, to appearance, an all-gold crown.

If a root be even with the gum, the gold can be made to encircle it. This is done in a very accurate and quick manner, by placing a soft steel wire, No. 27, around the root, and twisting the ends together till tight; then, burnishing the wire into the irregularities of the surface of the root, removing it and placing it on a block of soft but tough wood, and striking it with a flat hammer. You now have the exact counterpart of that portion of the root you wish to place the gold around. Gold crowns made and adjusted in this manner require about two hours' time, and necessitate but one appointment with the patient.—DR. S. B. LUCKIE, *Odontological So. Pa.*

SOCIETY NOTES.

AT the Manchester Odontological Society, Mr. E. Houghton made some introductory remarks on the subject of "Continuous-Gum Work," prior to his practical demonstration. He said that one of the difficulties to be overcome in Continuous-Gum Work, was the liability of the platinum base plate to warp in the furnace. To obviate this, it was his practice to put a stay of platinum wire between the extreme points of the plate, and secured to the plate by means of plaster and asbestos. The fracture of a tooth or a portion of the continuous-gum was a very rare thing, and by the system of removable facings, presented no unusual difficulty in repairing. In regard to the materials used for the gum work, Mr. Houghton said they had two excellent bodies in White's and Tees; the latter had the advantage of fusing at a lower temperature, but White's material probably was a more satisfactory color. It was most important that the process of cooling the finished piece, should be prolonged as long as possible. This Mr. Houghton was able to do by the use of a jacket made by lining a tin box with asbestos sheeting, and placing over the furnace after the enamel had been fired. By this means the cooling could be prolonged to about six hours.

In answer to an enquiry, Mr. Haughton said he used White's teeth, as English teeth would not bear the requisite heat.

Dr. Shaw said he had a specimen of vulcanite and continuous-gum work made in the year 1859. For some years he made a number of these cases, and he had been surprised at the small number of breakages which had occurred in the vulcanizing.

Mr. E. Houghton then exhibited specimens of continuous-gum work in various stages of manufacture; some specimens combined with vulcanite, and several in connection with a base plate of gold. The method of fixing the gum facing was essentially the same in each case, viz., by gold screws passing from the under surface of the base plate into the platinum at the point being made thick enough to allow sufficient depth for the screw. In the cases where vulcanite was the base, small pieces of metal plate were imbedded in the vulcanite at the point where the screws were intended to pass through.

DEMONSTRATIONS.—Mr. Dougan crowned a left lateral superior incisor, using a Logan crown. The remains of the root were cut down with a circular file turned by the engine, and the root canal which had been previously filled with gutta-percha, was enlarged and cut with fissure burs of the same size and shape as the Logan pattern. The close adaptation of the crown to the end of the root was obtained by interposing between them thin carbonized paper to mark the points of contact.

Before finally forcing the crown into position, the root canal was wiped out with alcohol, and dried by means of a hot air syringe. Oxyphosphate cement was then placed in the root canal with slightly oiled instruments, and also in the recess of the crown and around the post.

In reply to numerous questions Mr. Dougan said the use of special instruments to shape the root canal was objectionable, as they cut a round hole which weakened the root, and in his opinion the post should fit the root canal closely, and be held independently of the cement.

He considered the only advantages of the Logan crown were, the short time required to set it, and its cheapness, and he would prefer a crown made of English mineral on account of its much greater strength.

SETTING CROWNS.

THE more readily the crown can be adapted the greater will be its usefulness. I strongly object to the great waste of tooth-bone that is made necessary by the use of many of the recent methods. For this reason I have used a great number of Logan crowns, which, after roughening the platina pin, I attach with gutta-percha or oxyphosphate. I also use the Bonwill crown,

but give the preference to the "Logan," as it can be used without amalgam. In setting crowns, I do not usually trim the root down close to the margin of the gum, unless the line of union between the root and crown will be very perceptible. When preparing to attach an all-gold crown, I take a cast of the corresponding tooth on the opposite side of the mouth; then, after slight trimming, make a metal die, and from this strike up the whole crown, which I make of foil scraps melted up and rolled out to about No. 25 of the standard gauge. This all gold crown I have found very useful where the root is badly broken. A platina pin is first cemented in the root, and the crown attached to pin and root by oxyphosphate.—DR. E. H. NEALL.

ARRANGEMENT OF AIR CHAMBERS.

WHEN I use an "air chamber" at all, it is cut from a paper box, and shaped as my judgment of the case dictates. The greater surface the chamber is to cover, the thinner the paper. Paper is better than anything I ever used, because it is cheap, and when wet, it conforms accurately to the shape of the roof of the mouth, thus causing a uniform strain on tissue. In the impression, I enlarge the rugæ a little, and if palate is *hard*, cut a piece of the cloth, that comes on sheet rubber, the size of the *hard* palate, and place on the model before packing.—*Items*.

A BROKEN PLATE HOLDER.

A GOOD method for holding a broken rubber plate in position, while it is being waxed up, is to take a round tin box four inches in diameter and two inches deep, with a perforated bottom. Fill this box nearly full of very fine shot. Place the pieces of broken plate in position as they should be; then press down into the shot, drop on the hot wax, and hold box under stream of water to cool. The water will run out through the perforations in bottom.—F. E. BUCK in *Items*.

DRY PULP CANALS BEFORE SETTING CROWNS.

ONE great error in setting crowns is generally committed in the initiatory steps. As a rule the root is not properly dried. Few operators use hot air to dry the cavity; a precaution which

goes far towards insuring success. If, because of failure to thoroughly dry the cavity, we have a space between the root and the material for setting the crown, decay will follow, when, if the moisture had been dried from the devitalized wall, a hermetical joint could have been made.—DR. REGISTER.

TO REMOVE PLASTER FROM FLASKS.

DR. BUCKLAND paints the inner surface of flasks for vulcanite work with a solution of whiting, which allows the plaster to be removed easily and protects the flask from corrosion.

FOR YOUR OIL STONE, use one part glycerine and two parts alcohol. It keeps the surface clean, and sharp gritted; oil thickens by use and exposure, and gums the stone.—W. H. STEELE, *Items*.

QUERY?

WHAT SHALL I DO WITH THIS CASE?

A GENTLEMAN about 60 years of age whose teeth had been extracted about eight months. Have made him three black rubber plates for his upper jaw that were perfect in fit, but within forty-eight hours after commencing to wear them they would be so loose that they had to be held up in place a greater part of the time with the tongue. If any one can tell me what the matter is and how to overcome the trouble, I should feel very thankful.

C. W. B.

Correspondence.

"I charge you that this epistle be read."

NOTES FROM THE GEORGIA AND SOUTHERN DENTAL ASSOCIATIONS.

EDITOR OHIO JOURNAL OF DENTAL SCIENCE:—Score one each for the Georgia and the Southern Dental Associations. Both meetings were grand successes. Good attendance, good discussions, good clinics, good banquets. We are alive down here, Mr.

Editor, whether you know it or not. I can't give details of the two meetings, although one thing is especially worthy of mention in connection with our State meeting. The gold used for clinics was taken some from the mines near Gainesville where the meeting was held, and some of it from the very streets of the town. It was refined and made into plate and foil for us by that live gold firm, Rowan, whose gold is not excelled in all the world. Can you beat that, Mr. Editor, for "get up and get?"

Father Atkinson, of New York, was with us to our delight. He cliniced with the gold, a new experience to this father of dentistry. Our own *Southern Dental Journal* will give both meetings in detail, from which you must not hesitate to abstract all the juice. Tell the world all about it and next year find yourself at our next meeting on St. Simon's Island surrounded by your warm hearted Southern brethren. Dr. R. B. Adair will handle the gavel next year and will handle it well. I say again, come, and bring others of the Buckeye boys.

The Southern Dental Association met in this city July 15, with a large and enthusiastic attendance. John Storey of the big State of Texas, the only John, presided. He had worked faithfully for a good meeting and was not disappointed. Right here I lift my hat to John Story of Texas. His successor, Wright of South Carolina, a man who has been faithful from first to last, will keep the enthusiasm aglow and fan it next year, at Morehead City, S. C., into another brilliant blaze. The clan gathered from all quarters, each member vieing with the others to see who could add the most interest. Every shoulder was to the wheel and everything moved. Paper after paper was read, all good, discussions lagged not. The clinics under the able and faithful management of Luckie, of Miss., could not have been better. Everything from an inlay to implantation, a thousand little tricks and devices were shown and caught on to. The exhibits of instruments, chairs, cabinets, electrical appliances, etc., were fine, and of course large sales were made. I must not fail to mention a plan for a local habitation for the association put on foot. Dr. Richards, of Knoxville, who is ever full of enthusiasm and good works for his association, came with the plan mapped out and started the ball which will move until the aim is accomplished. After some good speeches and several motions the chairman appointed a committee consisting of one member from each State

whose duty it is to find a suitable location for a permanent home for the association. Where that will be is not known, the chairman of the committee, Dr. Richards, favors some lofty mountain of North Carolina where the Vanderbilts and other rich men are opening up and beautifying a perfect paradise. We expect to build wherever we locate, on land purchased for the purpose, a hall for meeting, lecture and clinical purposes. Each member of the association who desires can purchase a lot and build a cottage thereon, to which he can take his family. Our purpose is to have a chautauqua. Instead of holding a meeting of three or four days, we will be there a month, say during August. While we are recuperating in a body we will add to our stock of information. Instead of, say ten papers a day with a disjointed discussion on only a part of them, we will have, say two papers a day, or during a session, and full discussions. Instead of ten clinics at one time we will have, say one given before the whole assembly, and have it discussed. Don't you see how delightfully and instructively a month can be spent? A man with something new will surely turn his course toward the Southern Dental Chautauqua. We will feed upon the most wholesome food, drink the purest water, breathe the freshest air and enjoy the best thoughts of the profession. I hear you say now, I will make my arrangements to be at the Southern Dental Chautauqua, just as I have heard many leading men already say. We will have a post-graduate school of the first order, and who can tell but that a diploma from the Southern Dental Chautauqua will be a thing worth having at no distant day. Put your editorial brain to work on the scheme and see its beauties.

Our meeting closed with a grand banquet with toasts responded to by Stockton, of N. J., Atkinson, of N. Y., Taft, of Ohio, Gilson, of Mass., and others. Everything went lovely with sweet music, delicious viands, good wines, ending up with a good slice of Georgia watermelon for each. Come to see us next time.

Yours, B. H. CATCHING.

MISSOURI STATE DENTAL ASSOCIATION.

TWENTY-SIXTH annual meeting was held at Pertle Springs, Warrensburg, Mo., July 8, 9, 10, 11, 1890. President Dr. Henry Fisher called the meeting to order.

The committee on resolutions to the memory of Dr. A. Noland, presented the following, which were adopted by the Association :

To the Members of the Missouri State Dental Association :

WHEREAS, Death has removed from ranks our beloved brother and co-laborer, Dr. A. Noland, of Monroe City, on the 22nd of January, 1890; and

WHEREAS, Dr. Noland was a faithful student, an honored laborer, and worked hard to raise the standard of our profession in this State; therefore

Resolved, That this Association mourn with sorrow the loss sustained.

Resolved, That this Association hereby tender his bereaved family its heartfelt sympathies and condolence in this their sad bereavement, and may that God, in whom he so implicitly trusted, speak peace to their sad hearts in their distress.

Resolved, That a copy of these resolutions be sent to the family of our deceased brother and to the dental journals for publication.

B. Q. STEVENS,
G. M. RISLEY,
JAS. L. LEAVEL,
Committee.

The committee to draft resolutions on the death of Dr. Judd presented the following, which were adopted :

WHEREAS, The recent death of Dr. Homer Judd brings to mind his activity and influence in the organization of this Association, and his subsequent labor in extending its usefulness, to the great benefit of the profession in this State; and

WHEREAS, His noble character, energy and his literary attainments entitle him to an exalted place on the scroll of deceased members; therefore

Resolved, That in the death of Dr. Judd this Association has lost an honored member, whose professional character and example we emulate, and whose memory we ever hold dear.

Resolved, That the heartfelt sympathy and condolence of this Association is tendered the family of our departed brother in their sad bereavement.

Resolved, That a copy of these resolutions be sent to the family and to the dental journals for publication.

W. H. EAMES,
C. W. SPALDING,
J. C. GOODRICH,

Pertle Springs, July 9, 1890.

Committee.

Drs. Price, T. W. Reed and F. Swap were appointed a committee to draft suitable farewell resolutions to Dr. Spalding, and reported as follows:

Mr. President and Members of the Missouri State Dental Association,

Gentlemen:—We, your committee appointed to draft resolutions expressive of the pleasure of this Association, afforded by the presence of Dr. C. W. Spalding, and of regret that he will soon sever his social connections with us, most respectfully submit the following resolutions:

Resolved, That with a full appreciation of Dr. Spalding's virtues as a gentleman, his high moral character as a man, his eminent qualifications and invaluable counsel as a professional brother, we tender to him our most sincere thanks for his presence at this meeting (probably the last time we shall all meet him on this earth); we deeply regret that he should feel it necessary to sever his social connection with us.

Resolved, That we fully realize the fact that no one has done more than he to advance the standard of our profession and the best interests of this Association, which will ever, by us, be remembered and cherished with grateful hearts.

Resolved, That in his departure, he takes with him our most earnest wishes for his success, prosperity and happiness; and may kind Providence ever watch over, guide and shield him.

Resolved, That these resolutions be spread upon the records of this Association, a copy, properly engrossed, be presented to Dr. Spalding, and one sent to each of the dental journals for publication.

JAS. A. PRICE,
T. W. REED,
F. SWAP,

Committee.

The election of officers resulted as follows: President, Dr. J. F. McWilliams, Mexico; Vice-President, Dr. Geo. L. Shephard,

Sedalia; Second Vice-President, Dr. W. H. Buckley, Liberty; Recording Secretary, Dr. John G. Harper; Corresponding Secretary, Dr. William Conrad; Treasurer, Dr. James A. Price; Weston. Board of Censors, Drs. J. G. Hollingworth, W. L. Reed, Chas. L. Hungerford. Committee on Ethics, Drs. N. H. Gaines, C. V. Huff, J. W. Aikin. Publication Committee, Drs. E. E. Shattuck, H. S. Lowry, W. E. Tucker, Law, Jas. A. Price, Weston. Committee on New Appliances, Dr. J. M. Austin, St. Joseph. Executive Committee, Dr. William Conrad, Dr. Henry Fisher and Dr. J. W. Whipple, St. Louis. Supervisor of Clinics, Dr. A. J. Prosser, St. Louis.

Next place of meeting, Louisiana, Mo., first Tuesday after July 4, 1891.

WM. CONRAD,
Cor. Sec'y.

RESOLUTIONS ON THE DEATH OF DR. JOHN STEPHAN.

At a special meeting of the Cleveland Dental Society held June 26, 1890, the following resolutions were adopted and ordered sent to the OHIO JOURNAL for publication.

MARTHA J. ROBINSON, *Sec'y.*

WHEREAS, Divine Providence has called one of our number from us, Dr. John Stephan. Be it therefore

Resolved, That we extend to his grief stricken family our deepest sympathy in this affliction. That we feel keenly our loss of one always interested in the progress of dentistry, and we recommend that as many of this society attend the funeral as possible, and further resolve that the above resolution be sent to the OHIO JOURNAL for publication, and our Secretary be instructed to send a copy to the family.

CHAS. R. BUTLER,
CHAS. BUFFETT,
J. R. BELL,
Committee.

OBITUARY.

DR. JOHN STEPHAN.

DR. JOHN STEPHAN died of consumption at his home in Cleveland, Ohio, after an illness of over three years.

He was born in Essenheim, Germany, in 1848, consequently was nearly 42 years old when he died. He was the son of a mechanic who not wishing to raise his boys for the military service emigrated in 1851 to America. They settled in Cleveland where after a short time spent at the public schools young Stephan commenced his struggle with life's problem. During the war of the Rebellion he drummed for a regiment in camp at Cleveland, and on its departure offered his father one hundred dollars to be permitted to serve his adopted country as a drummer boy. Owing to his tender years his father refused permission and shortly after he was apprenticed to the machinist trade. Not liking his employers he shortly obtained his release and returned to the public schools to pursue his studies in the higher grades. His home at this time was near that of Dr. W. H. Atkinson with whose sons he was quite intimate. No doubt this acquaintance had much to do with turning his thoughts towards dentistry, for he soon left school and became a student of Dr. H. H. Newton, when after a short pupilage he attended his first course at the Ohio Dental College. On his return he found himself unable to pursue his studies further, and then commenced the struggle that in a few years, aided by the savings of a frugal wife, enabled him to finish his course and receive that which he had so long wished for, the degree of D.D.S. He once told the writer that then and only then did he feel that he had taken his place properly among the members of the dental profession. He was a faithful attendant at all meetings of the Northern Ohio and Cleveland Dental Societies, the former of which he was the retiring president at its last annual meeting, but his disease had so far obtained the mastery that he was unable to be present. Almost his last writing was a short address as its retiring president. Dr. Stephan leaves a widow and five children in comfortable circumstances.

J. E. R.

Editors' Specials.

"Write the Vision and make it plain."

DR. CHARLES BONSTALL.

BONSTALL.—In Wyoming, O., Tuesday evening, July 8, 1890, Charles Bonstall, in his 88th year.

WHEN the writer of this came from the medical into the dental profession he found the above named overwhelmingly active in dentistry and that which pertained to it. He was in full tide of active practice, was Treasurer of the Mississippi Valley Association of Dentists, Treasurer of the Ohio College Association, both of which offices he held for years. His official reports were always ready when called for, and an auditing committee invariably reported the same "correct." His character and conduct were found *correct*, his faith in the divine Saviour, we have no doubt, was found correct. When years began to render the practice of his profession burdensome, he went into the insurance business. Full of days and honors he was called to his rest.

THE ALVEOLAR PROCESS AND CO.

THE wisdom of design is shown in this little structure in various ways. How nicely it comes to time and place in childhood; and with what grand propriety it becomes disgusted and leaves, when rendered no longer useful by the sacrifice of a tooth. How firmly it holds the tooth in place during the process of mastication! These are parts of its ways. But it possesses others.

When from any cause, suppuration at the bottom of the socket takes place, the resistance of this process gives rise to excessive pain before the pus escapes. Now, from a misunderstanding of the conditions, we sometimes see malpractice. The physician becomes frightened, in some cases, at the idea of necrosis of the maxillary bone, and is not content with the removal of the tooth merely, but he wants to file, scrape or chisel away the dead bone. And he is too apt to regard even the smallest alveolar abscess as an indication for extraction.

After a tooth has been extracted a series of interesting changes takes place. Bony material is deposited in the bottom of the socket, and the sharp edges of the latter are removed by the processes of Nature, till at length, under the gum, is found a smooth portion of maxillary bone, covered with normal periosteum. Till this changed form has taken place, even slight pressure over the gum is painful, owing to the sharpness of the bony texture beneath. This condition is not understood by the patient, as it should be, and he is annoyed by his belief that a part of the tooth is in yet. A few words in explanation might save annoyance to both operator and patient. For it is not pleasant to have a patient return, when your parlors are full, and shout, in the crossest tones, "Doctor Pulltangle, you left all the roots of that tooth in." You may explain, but he is not satisfied; the explanation comes too late to be of practical use.

It is not within the province of this little paper to discuss the question of the reproduction of alveoli after they have been lost by disease. Wonders have been witnessed in this line, cases that had to contradict the accepted statements of general surgery. General surgery would state, "The facts are against you," while special surgery would pity the poor unfortunate facts, as the priest pitied the victim on the altar. But pity does not stay the hand in either case. Theory is good till facts travel. They are so stubborn and resistless that they demand a clear track, and woe be to that which attempts to obstruct.

But we have wandered, instead of discussing the profound pathological principles involved; and our apology is that we have been anticipated, and the thermometer is among the nineties.

ERRATA.

IN Dr. Waye's article in August JOURNAL, page 348, the third paragraph, "Perhaps no dentist" should be "Perhaps no mother." In the ninth line of same paragraph substitute "unnecessary" for "necessary."

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

COBBLER'S THREAD.—Why buy waxed floss silk thread for ligatures round teeth, when using rubber-dam? Ordinary cobbler's thread is very much cheaper, as strong, and in every respect as good.—*Brit. Jour.*

TO KEEP RUBBER-DAM FROM SLIPPING.—After the rubber is in place, and the teeth and rubber dried with napkin or bibulous paper, dust finely pulverized resin on the teeth and rubber. This will keep the dam in place, without other aid, in most cases.—S. G. WELCH, *Off. and Lab.*

GOLD CARRIER.—A very thin piece of steel, about a quarter of an inch square, fastened at an acute angle to a small handle, makes an excellent instrument for carrying folded gold down to cover the whole proximal surface of a filling in the anterior teeth where applying it successfully with pliers is not admissible.

A CONVENIENT HELPER.—When inserting a gold filling in the anterior teeth it happens that the under wall has not been built out enough and gold must be added from the under side, by slipping a matrix of thin steel, such as ribbon saw material, between the proximate surfaces the gold can be welded much easier, with less liability of chipping the tooth enamel.

A SIMPLE METHOD OF TRUING UP CORUNDUM WHEELS.—To true up a jointing or other corundum wheel take a straight edged piece of sheet-iron, of about No. 22 gauge, and while the moistened wheel is revolving on the lathe hold the straight edge of the iron against the face to be trued up. A few moments only are required to obtain a surface equal to that of a new wheel.

CHEAP SYRINGE.—A short time ago I was treating a case of pyorrhœa alveolaris, and I wanted the patient to use a syringe at home to wash out the pockets. I went to a rubber-store and

bought a small rubber ball that cost three cents, then took a glass tube from a medicine dropper, inserted it into the ball after enlarging the air-hole, and you see I had a perfect syringe.—
DR. J. F. ADAMS.

TO CORRECT AN OFFENSIVE BREATH.—An offensive odor of the breath due to bad teeth or other causes may be overcome, or at least greatly abated, by the habitual use of listerine. Add a teaspoonful to a tumblerful of water for a mouth-wash and gargle, and if a little is swallowed so much the better. Indeed, a bad breath is not unfrequently caused by the gaseous eructations of indigestion, and for this also listerine is an excellent remedy, in doses of twenty to thirty drops in a little water.—*The Sanitarian*.

DEODORIZATION OF IODOFORM.—DR. STOUT finds that the best effects, without altering the therapeutic effect, are to be obtained from coumarin, vanillin, and cinnamic acid. Combined with one-fifth part by weight of cinnamic acid, it can be used as a fine powder, the acid acting both as a deodorizer and as an antiseptic. One-ninth part of coumarin covers the odor *best*. Dr. Stout recommends that a mixture of the five powders be made and kept in stoppered bottles one or two months before use.—H. W. GILLET in *Archives*.

TO PRODUCE SPRING TEMPER IN SWISS BROACHES.—To draw Swiss broaches to a spring temper they should be placed on a steel, iron, or brass plate, one-eighth of an inch in thickness and three inches square. This should be held by pliers or forceps over the flame of a spirit-lamp, and be kept continually moving over it, so as to keep the plate as uniformly heated as possible. The broaches should be watched very carefully, and when they become of a dark-blue color they should be dropped into cold water.—*Items*.

CREOLIN AS A DISINFECTANT.—To us dentists, creolin (being absolutely safe, non-poisonous, its odor to the majority of patients, not very objectionable) is better adapted than carbolic acid or bichloride of mercury. One to three drops in a glass of water makes a pleasant, deodorizing, antiseptic and anti-bacterial mouth-wash. It was first made in Germany, from where our best article comes; it is not acid, but slightly alkaline, and should

be a thick, dark-brown, but transparent fluid. It does not injure steel polish or nickel plate.—DR. WERNER in *Archives*.

HYDRONAPHTHOL.—One thing that I wish to speak of is hydronapthol, saturated solution in water. It is prepared by Seabury & Johnson. I think it is one of the most advantageous substances we have within our reach, because it is so excellent as a disinfectant and as a microbicide—a fool-killer of the first water. The only objection to it is, that very susceptible people will complain of it as being too peppery. You can use it *ad lib.* as a mouth-wash, and defy microbes; and there is no danger of injuring your patients, even if they swallow it.—W. H. ATKINSON, *Archives*.

TOOTH TREATMENT AND FILLING.—DR. GEORGE A. MAXFIELD, of Holyoke, Mass., demonstrated his method by treating pulpless teeth. The case was a first upper molar in which the pulp was alive. The cavity was washed out with peroxide of hydrogen, followed by bichloride of mercury 1 to 250. It was then dried and a 10 per cent. solution of cocaine applied and the pulp extracted. The canals were drilled out with extra short drills for the right-angle hand-piece and a solution of iodoform in eucalyptol was put into them, and they were then filled with gutta-percha points.—1st Dist. So. Report, *Cosmos*.

A DENTAL ANÆSTHETIC.—The combination of cocaine and antipyrine in solution is said to act as a powerful local anæsthetic upon the gums, and also upon sensitive dentine. The anæsthesia is more lasting and more complete than when cocaine is used singly.

Dr. Martin, in *L'Union Medicale*, suggests the following formula, which he has used with great success:

R—Hydrochlorate of cocaine, gr. $\frac{3}{4}$;
 Antipyrine, gr. vj ;
 Distilled water, m. xvj . M.

—*Medical News*.

OIL OF CAJUPUT.—DR. TRUMAN spoke of the use of the oil of cajuput when filling with gutta-percha. He said the suggestion was given him by Dr. Roop. The merest film of the oil was used in the cavity and the gutta-percha pressed in. The oil slightly dissolved the gum and made it adhere to the walls of the cavity.

He had used this oil freely when filling roots, employing a cone of gutta-percha with which to fill the root-canal. He had also used it when inserting pivot teeth with gutta-percha. For filling roots he uses the oil *freely*, for pivoting teeth *moderately*, and for filling cavities with gutta-percha, *very sparingly*.—*Cosmos*.

RUBBER-DAM AND ASTRINGENT PAD.—MR. BRUNTON (Leeds) showed various ingenious contrivances. Firstly, he showed some bleached rubber-dam, made by soaking the ordinary rubber in cold water and wrapping it up. When dry it was white and remained so for some time. Secondly, he passed round a small astringent pad intended to apply to the saliva ducts to check that secretion during a dental operation. He used "chloralum" and found it would check the flow of saliva for a couple of hours and thus permit him to work without the use of the rubber-dam.—*Jour. Brit. Assn.*

THE DENTIST OF TO-DAY, unlike his predecessor dating before 1840, has a very accurate knowledge of chemistry, anatomy, physiology, surgery, materia medica, therapeutics, and in the practice of dentistry both operative and prosthetic. In this respect his knowledge of these subjects is not inferior to that of any doctor of medicine; but because he does not possess a doctor's degree M. D. he cannot claim for himself that he is a true specialist in medicine, because all specialists in medicine must first be doctors of medicine and afterward choose a specialty which has attached them to its practice, on account of their love for that particular branch of medicine.—DR. HARLAN.

SENSITIVE DENTINE.—DR. T. E. WEEKS says that at thirteen, if injury is inflicted at the distal ends of the dentinal fibrils, the nerve-endings, it is transmitted along the fibrils to the sensorium. The water in the tubuli, which is a constituent of the fibril, and which also surrounds it, is essential to this transmission of sensation. In proportion as the water is removed sensation is modified. Hence the adoption of different methods of dehydration for the control of sensitiveness of dentine, either by raising the temperature by means of hot air, etc., or lowering it through cold applications. The rapid motion of a keen instrument on sensitive dentine is painless, but the instrument should be one that will free itself of chips, and be small, thus having less friction.—*So. Jour.*

TO MAKE SWISS BROACHES SOFT, a piece of tin may be cut and bent so as to make a rough box, two and one-half inches long by one inch square. Fill half full of slacked lime, and place the broaches in the middle of the lime, and fill the box over them. Then heat to a red heat, either with the blow-pipe or in a stove fire, and allow all to gradually cool. They can then be polished by holding them flat on a hard smooth surface, and rubbing them lengthwise with oo emery paper.

Broaches rendered soft in this manner are very tough and can hardly be broken, and are safer for use in places difficult of access than those of spring temper.

They should be fastened in small handles, or used in the universal broach-holder.—DR. T. FILLEBROWN.

TEETH LOST BY RUBBER LIGATURES.—The patient was a child of thirteen years. Several months before coming under my observation the superior right and left first bicuspid had been extracted to make room for the cuspids, which were prominently outside the arch. Rubber-band ligatures were stretched over each bicuspid and cuspid to draw them together. The patient's report was that during the past two months she had suffered greatly from the pain and soreness of both bicuspid. These teeth were found to be very loose and much elongated. The alveolar process around them was entirely absorbed. The father of the child had been informed by the dentist who applied the ligatures that the condition of the mouth was due to hereditary syphilis. The retention of the bicuspid was so slight that they were easily removed, and a rubber band was found at the apex of each tooth. (From a lecture in the Baltimore College of Dental Surgery, February 8, 1889, by DR. KASSON C. GIBSON, of New York City).—*Cosmos*.

MANIPULATION OF AMALGAM—PHOSPHATE FILLING MATERIAL.—Have the fluid and powder for the cement on a glass slab, in right proportions. Mix the alloy with as little mercury as possible, and press into a thin plate, dividing into suitable sized blocks or squares. Dry the cavity, and protect from moisture; mix the cement just thick enough, so it will not flow. Cover all the surface of the cavity clear to the edges, almost filling it level full. As quickly as possible, press one block of the alloy into the adhe-

sive cement; then add alloy, and perfect the edges, carefully pressing out all surplus cement, allowing the cement to extend to the edge of the cavity, but not to show at any place. Practice will enable the operator to make a joint at the edge of the cavity, so there will be only a thin finish of the alloy at the immediate edge, which is desired to prevent leakage and discoloration. Many will be able to use alloy with much less mercury in this way. It will also be found that much more perfect condensation can be secured by laying bibulous paper, or a piece of muslin over the filling, and burnishing with greater force than could be done without it; but hard burnishing must not be practised after the alloy has begun to set.—DR. DRISCOLL, *Items*.

ANTISEPSIS.—The matter of syringes has always troubled me—that is, how to keep them septic. Suppose, for instance, we are syringing out some pocket where there is a constant discharge of pus, how are we to cleanse our syringe before using again? The ordinary syringe is packed with leather or cotton-packing, and is covered on the inside with a great deal of oil, and therefore becomes very difficult to make clean. I have made a couple of syringes which suit me very well, and which I would be pleased to have you examine. They are made by forming a thimble of platinum, into the closed end of which a fine gold tubing is inserted, and over the open end the rubber of a medicine dropper is passed. It is often necessary to tie the rubber bulb about the platinum thimble. These syringes are convenient, powerful, and readily cleansed. The metal parts of the syringe can readily be made aseptic by boiling; and the rubber bulb can be treated in the same way, or a fresh one used with each case. Heat is the most reliable sterilizer which we can use; and I employ it freely upon extracting forceps and other instruments. My method is to boil the article to be sterilized for an hour; some instruments can, however, be passed through the flame of a Bunsen burner.—DR. POTTER in *Archives*.

AMALGAM FILLING.—DR. CHARLES G. PEASE, of New York, demonstrated the use of amalgam wafers, and gave the following description: The wafer is made by enveloping a portion of freshly-prepared amalgam in a fold of chamois skin and squeezing it hard, employing large, strong pliers made for the purpose.

The method of using is to place a wafer upon a filling of ordinarily mixed amalgam which has just been inserted in a cavity, and crushing it into powdery pieces by tapping until it is thoroughly incorporated with the main filling and becomes a homogeneous mass. In large cavities a wafer is applied or added when half the filling is introduced, a second wafer being placed on the surface at completion. In contouring and building entire crowns wafering is of great value, hardening the amalgam as the work proceeds. This process is also useful to increase the consistency of amalgam which has been inserted soft for some specific object, as prevention of pulp-irritation or of too severe impingement upon exquisitely sensitive or much decalcified dentine. In introducing the fillings, tapping with light blows from an appropriate instrument will be found to place the filling in more perfect apposition with the walls of the cavity than the process of rubbing, and a better union of the various pieces used is secured. It is claimed for this method that by it the setting of an amalgam filling is hastened, the spheroidal tendency lessened, and the edge strength, density, and whiteness of the filling much increased, and that too severe pressure upon frail walls is avoided.—1st *Dist. So. Report, Cosmos.*

“HEAVEN’S CORDIAL.”—For soothing the toothache, after-pain in extracting, and the pain of neuralgia, inflammatory rheumatism, etc., take

Best alcohol	-	-	-	-	1 ounce.
Chloroform	-	-	-	-	2 ounces.
Sulph. ether	-	-	-	-	$\frac{3}{4}$ ounce.
Gum camphor	-	-	-	-	$\frac{1}{2}$ “
Laudanum	-	-	-	-	$\frac{1}{8}$ “
Oil of cloves	-	-	-	-	$\frac{1}{2}$ “

For toothache, plug the carious tooth with cotton saturated with this cordial; if for after-pain in extracting, press a good quantity of the saturated pledget well up in the socket, and allow it to remain for an hour or two. If there is fear of hemorrhage, place a little powdered tannin on the side of the pledget first entering the socket. You can also relieve the most stubborn toothache of pregnancy by first bathing the tooth and gums with cotton soaked with it, having the patient draw in the breath a few times, so as to pass the air over it; change the saturated

cotton once or twice, if necessary. It is sure to soothe the pain and the whole nervous system. For toothache in pregnancy, when the suffering has been fearful and the prostration dangerous, I have always administered it with relief. I could not practice without it. It should be in every obstetrical hospital and in every humane institution, and in every household. Rubbed on the skin it is very penetrating, and of frequent use in all painful swellings and bruises, if the skin is not abraded. In the dental office it makes the dentist master of the situation. I have studied, worried, and experimented, and bought everything, in hopes of finding "the nectar distilled in the garden of the gods"; but I never found till I found this.—DR. J. N. HARRIS, *Items*.

UNITING PORCELAIN TO AMALGAM.—DR. C. H. LAND, Detroit, Mich., says: As an auxiliary to the process of molding sections of porcelain, so that they may be made to conform to the exact shape of the cavity in a decayed tooth by means of a metallic matrix, it has, also, come to my lot, to discover and perfect a method of causing amalgam to adhere to porcelain, or any other vitrified substance, demonstrating a wonderful degree of tenacity; and, most important, provides a means of establishing both fillings, inlays, and porcelain crowns with a cement that is absolutely impervious to the action of the fluids of the mouth. By actual tests, the adhesion will sustain a weight of over two hundred pounds to the square inch of surface covered in practice. I have molar crowns composing simply the cusps, the proximal side has a biscuited or porous surface fused thereto. This surface is then saturated with a solution of gold, and, when completed, forms a tooth section provided with a coating of pure gold, adhering firmly to the porcelain. To this gold coating, amalgam will become thoroughly and firmly attached. In many instances, the roots of molar teeth may first be built up with amalgam and allowed to harden; it is then trimmed to a convenient shape, a suitable gold-lined crown selected, and amalgam burnished to the gold surface; also, amalgam is burnished over the prepared root, and the two carefully malleted together; a quick-setting cement is then placed between the crown and the adjacent teeth. This holds the cap in place, until the amalgam becomes hardened, when it can be removed, and all rough surfaces polished. By the aid of this new discovery, a great variety of new and useful operations are made possible.

Large cavities in molar teeth may have porcelain stoppers amalgamated in place. Eighth, quarter, half, three-quarters, and entire crowns may be cemented to defective teeth with a substance, that years of experience have shown is absolutely free from being destroyed by the secretions of the mouth.—*Items.*

Societies.

“Wherewith one may edify another.”

TO THE MEMBERS OF THE DENTAL PROFESSION.

YOUR attention is called to the next meeting of the Ohio State Dental Society to be held at Columbus, October 28, 29, 30, 1890. You are cordially invited to be present and participate in the meetings if possible. Those having new appliances or methods of practice for the good of the profession, are solicited to communicate with the committee, who will take pains in offering an opportunity for the proper presentation of the same.

A. F. EMMINGER,

W. H. TODD,

OTTO ARNOLD,

Address, COLUMBUS, O.

Ex. Committee.

AMERICAN DENTAL ASSOCIATION.

AT the recent meeting of this society the following officers were elected for the ensuing year: President, A. W. Harlan, Chicago; 1st Vice-President, J. D. Patterson, Kansas City; 2nd Vice-President, H. B. Noble, Washington, D. C.; Rec. Secretary, Geo. H. Cushing, Chicago; Cor. Secretary, Fred A. Levy, Orange, N. J.; Treasurer, A. H. Fuller, St. Louis. New members of the Executive Committee are C. N. Peirce, L. D. Shepard, H. A. Smith.

THE DENTAL PROTECTIVE ASSOCIATION.

At the meeting of the Michigan Dental Society the principal points in Dr. Crouse's remarks were: First, that by combining in some such an organization as the Dental Protective Associa-

tion we band the strength of ten thousand men into one. All defense necessary can be made with but little more expense than would be required for an individual. The preparation of one case will answer for all and all evidence can be collected better by an association than in any other way.

Second, that it is very important that all get into the association at this time for the reason that an appealed suit to the Supreme Court before the association was formed, will probably be decided in favor of the Crown Co., owing to deficiency of evidence and imperfect presentation. If the Crown Co. win this suit they will send notices all over the U. S., thereby demoralizing the profession and causing many to pay them money who should be in the Protective Association and avoid that calamity. The Protective Association will be ready with new evidence and a new record and can take care of its members against any claims of the Crown Co. If you are not in the association the association will not take care of you when the time comes.

If each man in the profession will pay \$10 and assume a responsibility of ten more without any further assessments, we will have an organization that is sure to break up all this abuse and save the dental profession an annual outlay of, on an average of \$100 each to unjust claimants. Remember it will cost more than \$10 later to join, and will certainly cost more than that if you do not protect yourself.

DR. DOUGLAS moved the appointment of a committee to frame a resolution expressing the attitude of the Michigan Dental Association toward the Dental Protective Association. The motion carried and the president appointed Drs. Dorrance, Douglas and Sanders the committee who reported the following resolutions which were unanimously adopted :

Resolved, That the Michigan Dental Association heartily approves the aim and plan of the Dental Protective Association ; and that it is further

Resolved, That it is the duty of every member of the dental profession in this State to join the Dental Protective Association.

It is also *Resolved*, That Dr. Crouse be requested to furnish the dental journals with an abstract of his remarks for publication.

W. H. DORRANCE,

W. D. SANDERS,

— DOUGLAS,


Committee.

W. M. CLELAND, *Sec'y.*

Books and Pamphlets.

IRREGULARITIES.—Vol. I of Dr. J. N. Farrar's work on irregularities will appear about November, Vol. II a few months later and Vol. III will soon follow that. Vol. I and II will contain not far from 2,000 cuts, Vol. III will be a pictorial index. Delays in the printing have made it impossible to issue the work at as early a date as the author had hoped, but it promises to be the better for the delay.

THE THERAPEUTICAL APPLICATIONS OF PEROXIDE OF HYDROGEN (medicinal) AND GLYCOZONE, by Charles Marchand, chemist. New York. 1890. This pamphlet of 56 pages treats of the application of these remedies in the treatment of diseases caused by germs, bacteria, microbes. The preparations of Marchand are world renowned and of a superior quality. They are used extensively by the medical profession and highly recommended. Many of the dental profession are using them, and all who desire a reliable peroxide of hydrogen will do well to secure Marchand's preparation. The pamphlet contains much information regarding the relations of bacteria to disease and treatment of germ diseases. You can secure one of them by addressing the Drevet Mfg. Co., 10 W. 4th St., New York City.

DENTAL MIRROR.—This new dental journal is published in New York City and edited by Dr. R. Ottolengui. The editor proposes to operate in a different field from the other dental journals which, he states, are in the main, "mouth-pieces of specified societies whose transactions they print," etc. It is proposed to have a leading original article in each issue and follow this with comparative methods of practice, bearing upon the subject of the paper, obtained from leading dentists by correspondence. While this method will perhaps bring out a few more opinions it is virtually the same as publishing a society paper and discussions thereon. To-day some of the grandest thoughts given to the profession are at society meetings, and the JOURNAL for one is glad to give its readers the benefit of these. A department in the *Mirror* will be devoted to questions and answers, and beginning with Aug. issue Dr. L. P. Haskell, of Chicago, will conduct a department for the Laboratory. This we predict will be of great value as every one knows the ability of that gentleman. The editorial management is in competent hands. Dr. Ottolengui's writings for other journals have been well received and we predict that they will be a prominent feature of the *Mirror*. Here is our  Dr. O. with best wishes of success in your new undertaking.

Our Aftermath.

DR. H. T. SMITH, of Cincinnati, is the new demonstrator of Analytical Chemistry in the Ohio Dental College.

DIED—HARLAN.—Died at their family residence in Toledo, O., Aug. 13, 1890, Metta R., wife of Dr. H. E. Harlan, aged 31 years.

DR. L. E. CUSTER and wife, of Dayton, Ohio, are travelling in Europe. Dr. Custer attended the International Medical Congress in Berlin.

NEW DENTAL JOURNAL.—The *Dental Mirror* is the name of a new publication with DR. R. OTTOLENGUI as editor. Published monthly by the Dental Publishing Company, New York City.

DR. H. A. BEAMER, of Paris, Ky., died of heart failure at Colville, Ky., July 25, 1890, aged about 60 years. Dr. B. was well known to the members of the Mississippi Valley Dental Association for he was seldom absent from its meetings.

DR. E. B. LOUD, late of Paris, France, is dead. He was a brother of the wife of the late Dr. M. DeCamp, of Mansfield, Ohio, and uncle of Dr. A. L. DeCamp, Chicago. We notice that he was to be buried at Mt. Vernon, Ohio, his birth-place.

NEW APPOINTMENT.—Dr. James Truman, Philadelphia, Pa., has been selected as editor of the *International Dental Journal* to succeed Dr. W. X. Sudduth who has been appointed Secretary and Professor of Pathology and Oral Surgery in the Dental Department of Minnesota University.

THE DENTIST should be what he is called—a doctor or teacher—a man of knowledge—a guide to his patients, who, necessarily, know little either as to the advisability of an operation, as to its character, or as to the therapeutic or hygienic requirements of their own cases. In a word, the dentist should know, and should know fully, what the patient cannot possibly know, that is, *what is best for the patient*.—*Cosmos*.

STATUS OF DENTISTRY.—Dentistry has developed and grown up outside of medicine and independent of it. It has built its own colleges. It has its own text books, its own literature, its own periodicals, its own societies and association, and its own appliances. In its genesis and history no closer relationship can be traced than as an adjunct of medicine it covers an important field in the healing art for which medicine had failed to make provision.

Far distant be the day when our societies, our associations, our clinics, shall be abandoned that we may form a section in a medical association. We have done well in the past and may do better in the future. We have made great and rapid progress in the past, and if true and diligent the future holds in store for us still greater advances.

Let us be satisfied to be dentists, and at the same time full of ambition to be skillful dentists, intelligent dentists, scientific dentists, honorable dentists, and the public will not be slow to accord to us all proper respect and all needful social recognition. — DR. J. B. WILLMOTT, *Dom. Jour.*

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Contributions.

"A word fitly spoken is like apples of gold."—SOLOMON.

TIMELY SUGGESTIONS.

BY GEO. A. MILLS, NEW YORK CITY.

ALL intelligent practitioners will accord in the belief that the largest degree of health attainable in the surrounding tissues of the teeth insures the largest conservation.

That this subject has had largely an indirect if not direct attention, is true. Those who have familiarized themselves with our literature, will find that little but cursory attention has been given to this subject until a recent date. Any one who will take the pains to investigate will find in the published proceedings of the American Dental Association of 1876, that in a discussion of the better methods for the preservation of teeth, the importance of an earnest and intelligent attention of the general condition of health surrounding the teeth as a major factor in their better preservation, was advocated only by myself. As this statement is proven, it may not be considered egotistical, and it will be easily discovered that I took the same earnest position at the meeting of the American Dental Convention which convened the same month at Philadelphia. I wish it to be understood that my

purpose in placing these facts in the introduction of this article is for the reason that I deem it of associate importance to the subject to be presented, for it was at that period that my convictions were being correlated into an intelligent belief that our calling was nearing a new epoch in which our attention is to be more directly centered upon the medical and surgical aspects of our practice, their necessary and more intimate relations to the previously mechanical practice.

At this point it was fully manifested to all critical observers that we were on the flood tide of enthusiasm in the advanced methods of filling teeth. I may say that ideally we had been presented with the acme of perfection and beauty, the "contour of filling," and it was at this time I was formulating in my mind a transposition of a familiar saying, "What does all this perfection and beauty of mechanism profit that we are able to so certainly save the crown of a tooth, yet there is no staring us in the face a disorder that tends to certain destruction (seemingly) of its socket in a greater or less degree."

As some 25 years have elapsed since the introduction of Dr. Riggs' view, I consider it appropriate to note somewhat of the progress which has taken place.

First, his views have been confirmed by two of the most eminent men in our profession, Drs. Atkinson and Garretson. Dr. Atkinson in one of his ablest papers on this subject before the First District Society of New York said: "The merits of the Riggs' treatment is the trimming of the alveolar border." The ability shown in this paper consists in the portrayal of basal principles on which this disorder, "Riggs' disease," so-called, has its origin. I consider it unanswerable, although it has been avowed since that the paper on this disorder is yet to be written, I do not think so. Dr. Garretson's views are certainly stated in his brilliant little brochure on the "Use of the Surgical Engine," where he says, "It is necessary to trim the necrosed edge of the alveolus." As I have referred to my maiden effort in introducing this subject of Riggs' disease and its importance as it impressed me at the time, I found little or no response, particularly from the American Dental Association. What I did say before the body referred to was incorrectly reported. I felt so chagrined on hearing some severe criticisms, saying that I did not do justice to Dr. Riggs, that I formed a firm resolution to try and put myself cor-

rectly before the profession. The result as many know was the series of six papers, "What I know about Riggs' Disease," published in the *Cosmos* in 1876-77. At the meeting of the American Dental Association, held in Chicago the following year, Dr. Rehwinkel presented his able paper taking as his substitutive title for Riggs' disease, "Pyorrhœa Alveolaris." This was the initiative reception of the subject by this body, and I hardly need to say from that time no one subject has had more interested attention. While it has been amusing, yet in no little sense interesting to note the avidity with which different writers have selected names for the disorder, Drs. Black, Ensen, Magitot, Farrar; lastly, and I think not the least, Heitzmann's term, Pericementitis.

For my part I have never favored the term introduced by the late Dr. Rehwinkel, for I considered that the term only indicated one phase of the disorder introduced to our notice by the late Dr. Riggs. He always emphasized the fact that he considered all the gum or socket disorders under one general classification, and that they were amenable to his special method of treatment. This I have always kept in view in all that I have done, said, or written on the subject. I do not feel that this paper would be complete without due reference to the fact of the large practical interest I have manifested in this subject during the last thirteen years by pen, voice, and actual demonstration in the mouth, both in clinics and my personal practice. I have nearly seven hundred written out cases so recorded one could take them and tell how I have cared for each individual case, and in a large sense noted the age, temperament, and the phase of the disease. While I have had a very much larger list of cases both of major and minor proportions that have passed under my observation. These facts I note to emphasize that intelligent and earnest enthusiasm carries conviction to the receptive mind of claim for attention of no ordinary degree. I concede to no member of our calling a greater desire according to my ability for understanding and excellence in all that pertains to its true elevation during all my thirty-seven years of practice. Although these introductory remarks may invite criticism, yet I present them without any squeamishness or thought but what they will find a profitable place in all that is associated with the true interest of our yet to be full and rounded out profession.

I purpose to place myself in somewhat the same position as did Dr. Riggs in his introduction of the disorder now called "Riggs' disease," viz.: not that it was an unrecognizable disorder, but while it had been long observed in its generalities he had by earnest, devoted and intelligent observation discovered a radical and remedial treatment, which involved the applied principles of surgical skill. To make all of the qualifications in his views plain, I will note that while he generalized the many phases of gum trouble as amenable to his treatment, he minutely described some of their peculiarities which had not been noticed by the general observer, or at least so recorded in literature. As all of this has now become a part of the published record, I do not need to multiply here. Having been an exhaustive peruser of all that has been published, so far as I know, there is one phase which I wish to emphasize here for I am quite certain that it has not had its due attention; and hence its practical benefit has not accrued in any proportion commensurate to its importance in the reduction of a large factor in the promotion of a destructive and afflictive waste of tooth structure, viz., erosion and etching at the necks principally, and less frequently in other portions of the teeth.

At no time of life is this etching more manifest than from childhood to puberty. During this stage of life there is manifested in many patients a decided activity of tooth solution, expressed by a white thread-like line to a greater or less degree in the buccal border of the molars and bicuspid more often, and yet not infrequently on the labial borders of the anterior teeth. By a casual examination there will not only be found a decided roughness, but also often distinct apertures through the enamel into the dentine resembling worm holes.

In calling attention to the conditions of the gum at this stage, I have often been met with the remark that it was perfectly healthy, which is in fact exactly the reverse. To the ordinary observer unless the gum is deeply reddened, congested or suppurating, it is not considered to be in an unhealthy state, but to the educated observer it is readily noticed that the gum is in a decidedly anæmic or bloodless state; hence, instead of a normal secretion issuing therefrom, there is present an acrid or abnormal secretion; and it does not need an astute knowledge to decide that this acrid secretion is the active agency in the taking down

of the tooth structure. Every faithful practitioner is fully conscious of the daily evidence of continual distress, both of the patient and operator, while he remembers his effort to repair the additional attacks of a former operation, which at that time was perfect so far as the mechanism was concerned.

This disorder of gum and socket has its rise in neural disorder of this I am fully convinced. It arises from a disturbance of the sympathetic nerves, which it transmits to the nutrient nerves and thus a denutrient condition is the result which manifests itself in the teeth and associated tissues because of their intimate connection with the nervous system. This readily indicates a debility *in esse* with a local expression at the margin of the gums. Allied to this local debility is a low state of inflammation or combustion. Could I specify the distinct acid present in this special phase of gum disorder it would add much of interest, yet it has not been my purpose to more than emphasize the fact of the presence of the disorder; something of its etiology; its activity of tooth waste; its victory over the best operators; and a rational remedial arrest by surgical and constitutional treatment, which will not only bring a large amount of personal comfort to the public, but economy in finance, a decided increase of per centage in conservation of teeth and emphasis to the importance of our much berated calling. This disorder as I have remarked, manifests itself during the earlier portion of life. It is only a phase of Riggs' disease, not so largely directing its activity to the alveolar border as devoting its energies near the border line of the enamel. It is my belief that the acrid secretion is made more potent by its association with atmospheric air on the tooth, and the slower process or less destructiveness is because of the absence of it in connection with the alveolar border. At this juncture of my subject, I ask, what is the usual practice with these conditions as recorded in our literature? So far as I am informed by my reading or by association, I know only of the application of mechanics, by which I mean simply filling or grinding and polishing the surfaces. This is the mass of practice, there may be exceptions. Before Dr. Riggs passed away I made known to him the views I here express, as many know he did not hook himself on the first appearance of an attractive fly; but in my last meeting with him, I emphasized my belief as confirmed by an actual practice, and he acquiesced

in the thought it might be true, and said such was his confidence in my purposes that no doubt I would establish it as sound practice. The knowledge I now possess gives me boldness to assume the truth of it. It is my daily custom on assuming the care of such cases to direct the attention of the patient to the disordered condition and the importance of its treatment. This more often than otherwise turns the office into a lecture room; and every earnest practitioner knows full well the cost of solicitation.

It being a new presentation, the mass of patients are not prepared to accept it—not at their cost. It is well known that I *am* a confirmed believer in the Riggs' treatment strictly as taught by him; that is, with *the use of the instruments devised by him*. Under his teachings it was none the less than a studied out system which takes a case *carte blanche*, taking into notice each individual tooth so far as it needs surgical attention, and proceeding throughout the full number in the same manner.

Now I am prepared to say that I advocate the Riggs' treatment for this specified phase of disorder. Adding to this both local and constitutional help as it case indicates. And I may wisely add that a maximum per centage of the cases require constitutional aid. No one remedy has proved so potent for good in the mass of cases as the sulphate of cinchonidia, emphatically advocated by Dr. Atkinson for the toning up of patients. Not only have I applied it personally, and to my family, but also to a large number of patients, so that it is digested knowledge. I know its value. As Dr. Atkinson's theory of its action in the system is published, I will only refer to it, saying that to me it is a rational view, that it supplies absent cruoin or red color of the blood. However this may be, to my mind the action of the powerful astringent effect, impressing its influence on the nervous system by a contraction and increasing the tension, so that the respiratory apparatus is made better able to perform its normal function, thus acting on the heart, increasing the propulsive power and forcing the nutrient fluids to the farthest extremities of the capillaries. Surgical treatment serves to *arrest* the *disorder*, and constitutional treatment to *hold* it in *check*. I may be excused if I do refer here to the general idea that has gained ground relative to the severity of the Riggs' treatment. I am not at all unmindful of the fact, neither can I forego the opportunity of saying that my own experience has fully disproved the

necessity of it. Only since I have been preparing this paper has a physician called for my services, and has spoken of his wife's experience, saying, "I think she has fully concluded from her experience—not in my hands—that she must let her teeth take their course," and further, "It seems a pity, Doctor, that there cannot be some humane method." I replied that there has been much progress; that I had no such complaints from my patients. This same physician has since accompanied a patient to my office who had undergone a sadder experience than his wife; and and after this former treatment the physician was obliged to spend several hours in attendance upon her, until he was able to bring the lady into a condition of comparative comfort from nervous exhaustion. The lady, being of an extremely refined temperament, could not think of losing her teeth, decided to accept my services after an assurance that she would not be subjected to any such experiences in my hands. Her physician accompanied her during the sitting, and saw my course of treatment to the thirteen superior teeth remaining, and listened to the testimony of the patient. He remarked before leaving the office, "Doctor, you will most likely receive a visit from my wife after I am able to communicate with her."

I can in each case, after an examination, determine the degree of tenderness there may be, and I proceed in a preparatory way by which I am able to reduce the difficulty to a minimum. I yet wish to add, what too many practitioners do not much appreciate, the idea that delicacy of manipulation has much to do in the amelioration of pain and disagreeableness in this field of practice as in the department of filling teeth.

Just here in this connection I will refer you to Dr. Barrett's lecture at Topeka, Kansas, lately, as very timely, and every dental school in the land should profit by the hint. I wish to add that I consider this application of the Riggs' treatment to this special phase of disorder (surgical), and the preparatory treatment for lessening the infliction of pain, new.

My preparatory treatment is the application of acid both sulphuric or nitro muriatic of such potency as in my judgment the individual case may require. These act as a caustic in greater or less degree, and serve both as an obtunder and as an aid in the removal of deposits.

As a resume for this paper it is due to say that it evinces

a decided emphasis of its importance, for it intelligently leads direct to the thought that the consideration of a healthy surrounding to the teeth insures greater decrease of waste of tooth substance by any agency employed. The fuller practice of this treatment for the general disorder whose consideration originated with Dr. Riggs, has proved this to every observing practitioner, which he is in duty bound to give the benefit of to every patient he assumes the charge of, and it involves a moral obligation that shall lead him to educate them to understand the vast importance of its value.

More, can any conscientious practitioner continue to give this subject inattention when it can be fully shown that but a small proportion of success in saving teeth can be attained as compared with intelligent attention. To assume the department which this field of practice demands, carries with it a necessity for an appreciation of the value of medical and surgical principles, which are now, whether we will or no, forcing down upon us a closer alliance of a broader field of education. The day has passed when we can dodge the issue, "Is a dentist a doctor?" and we must begin to square ourselves to this. If he is not, then the time has come when he must prepare himself to be. The public is coming more and more to us for a larger range of service. They are beginning to resent it that they are made victims of dentists by the lack of ability in those they have reposed confidence for many years at last to find themselves able to be relieved by more progressive practitioners.

The men that have stood still and let their large clientele find out their deficiencies in this field by a comparison with the better cared-for condition of their friends, when they have been continually that there was no relief, and now they are able to disprove it. Therefore I do not hesitate to assert that if what I have emphasized is so true, it is but incumbent on them either to try to disprove it, or be aroused to give the public the value of it. I take the liberty of speaking thus, for it is true that the mass of practice is based upon mechanism. We are not a fully rounded, liberal profession, yet we will be. We are under the bane of the trade element and in proportion as we are influenced by it we will fail to be convinced that it costs more to save teeth than it does simply to fill them. Therefore an increase of liberality in professional attainments will insure to the public a larger range

of cultured skill. This is so with the medical profession. And no one thing has tended more to strengthen this union of confidence with the public than their concentrated purposes in eleemosynary work, which is so largely characteristic with them all over the civilized world. Is it not about time for us to evince evidence of liberality in this direction? And in getting away from the trade element that is so much an element of weakness at the present with us. It may be that the mote in another's eye has become, or is in danger of becoming, a beam in our own.

THE FIRST PREMOLAR IN THE TYPICAL DENTITION OF THE PLACENTAL MAMMALS.

BY ANDREW WILSON.

THE number of species in which there are, in the adult, four teeth separating the canine from the molars, is considerable, but in very few of these cases are anatomists or naturalists agreed in regarding the one next to the canine as a premolar.

These are in which the typical four milk molars are succeeded vertically by four permanent teeth, and, so far as observed, they are very few indeed. As examples in recent species we have the tapirs, and, according to Mr. Spence Bates, the mole.

In the vast majority this tooth has neither had a predecessor nor will have a successor; and, while regarded by some as the first premolar, it is by others held to belong to the milk series, thus giving rise to considerable confusion, which is not lessened by its being occasionally counted in both.

As showing this confusion, I will quote a few extracts from great authorities. Professor Huxley,* writing of the Horse, says, "The tooth here counted as a first premolar may be a milk tooth, as it appears to have neither a predecessor nor successor, and soon disappears."

Of the Rhinoceri† "of the four milk molars, the first, as in the Horse, is smaller than the others, and is not replaced."

I may notice, in passing, that in some extinct Rhinoceri there was both an MM.₁ and a PM.₁ in the upper jaw at least.

Speaking of the Tapirs,‡ he says, "In the anterior premolar (or milk molar?)"

* Anat. Vert. Animals, p. 295.

† Anat. Vert. Animals, p. 309.

‡ *Idem.*, p. 311.

In this genus it is now known that there is in the upper jaw both a MM_1 and a PM_{11} as is well known in the beautiful preparations lately added to the Science and Art Museum in this city. These consist of the crania of types of the several mammalian orders, having the milk series of teeth *in situ*, while, the outer wall of the alveolar process having been removed, the permanent teeth are seen lying in their crypts.

I would strongly recommend members to inspect this most interesting and instructive collection.

Of the Pig,* on one page he gives the adult formula as having $PM_{\frac{1}{4}}$, then a couple of pages further on, and after giving the milk dentition as having $MM_{\frac{1}{4}}$, he says, "The first permanent molar is the first tooth of the permanent set which comes into place (at about six months after birth), and the permanent dentition is completed in the third year, at which time the first deciduous molar, which is not replaced, falls out," and he then gives the permanent formula as having $PM_{\frac{3}{8}}$.

Of the Hippopotamus,† after giving the milk molars as $\frac{4}{4}$, he says, "The first deciduous molar persists a long time, and seems not to be replaced."

Treating of the Camel he says, "There are not more than five grinding teeth, in a continuous series, above and below," but he ignores the presence of the caniniform PM_1 in the upper jaw, which is separated from PM_3 by a diastema, PM_2 being suppressed.

One more quotation from him. Of the Dog,‡ he says of the anterior three premolars, "These teeth are two-fanged," when in reality the first is single-rooted, and almost rudimentary in form.

Again, the first premolar of the adult dentition, having no deciduous predecessor, so that in this, as in so many other cases, it is doubtful whether it should be counted in the milk, or in the adult dentition." "The so-called 'first premolar' of the adult, and anterior molars appear before any of the deciduous molars are shed."

Professor Owen, in his *Odontography* (pages 477, 484), says of the Dog: "The first permanent premolar comes into place before any of the deciduous teeth are shed, its germinal predecessor disappearing before birth," and of the Hyæna, "The figure of the skull of the young *Hyæna Crocuta* . . . shows that

* *Idem.*, pp. 323, 317.

† *Idem.*, p. 319.

‡ *Idem.*, p. 328.

stage when the correspondence with the formula of the genus *Felis* is completed by the appearance, in the upper jaw, of a small premolar in the interspace between the canine and the first molar of the deciduous series; but this appearance is due to the apex of the first permanent premolar, which cuts the gum before any of the normal deciduous teeth are shed; whether it is preceded, as in the Dog, by a deciduous germ tooth in the foetus, I know not."

Mr. C. S. Tomes in his Manual is very unsatisfactory in his treatment of this tooth, in some cases speaking of it as a temporary tooth, in others as a permanent one, and even the figures and text contradict each other.

Lastly, in a foot-note to the first page of the Introduction to vol. iv. of the Cat. Fos. Mam., Brit. Mus., 1886, we find it stated, "The author is inclined to believe that the first cheek-tooth in the Perissodactyla—which in *Tapirus* is always replaced by a vertical successor, in *Rhinocerus* is occasionally so replaced, but in *Equus* never had any successor, and is frequently absent—belongs to the milk molar rather than the premolar series." No notice being taken of the homologous tooth in either the Artiodactyla or the Carnivora, although any decision regarding the one must be equally applicable to the others.

Turning now to the reasons given in support of its being regarded as a milk molar, these are two—first, its not having had a predecessor, and, second, its being soon shed.

Having in the Mammalia many instances of the absorption of milk teeth in various stages of development "in utero," and seeing the contradictory statements made regarding the presence of such a tooth in the foetal dog, as evidenced in the quotations given from Owen and Huxley, much importance cannot be attached to the first reason. But, even supposing that there is no predecessor, we may put this reason aside, as we find that the same authorities who hesitate to recognize as an established fact that in the marsupials all the premolars, excepting the last, have had no predecessors, and that in some species, even of the last one, it is doubtful or not proven, so far as present knowledge goes.

Turning now to the second reason, its being in many cases soon lost, we find that while in some it is so, in many more it is long retained—the more surprising, seeing that it seldom is a

functional tooth. A more important point would be the period of its eruption, compared with that of the undoubted milk molars, and coincident with that of the first permanent molar. Supposing it to be a milk molar, we have the anomaly of its eruption being preceded by that of the second, third, and fourth milk molars, and coincident with, if not slightly after, that of the permanent molar. Now this, which would be remarkable if a milk tooth, would not be so if a permanent one; its early eruption, compared to that of the other premolars, could be explained by the fact of its having had no predecessor.

In man we frequently, I may say usually, find that when a milk tooth has had to be removed very early in life, its successor appears much sooner than would have been the case had it been normally shed. Still more to the point, in the only case in man in which I have met with a front permanent tooth, which had no temporary predecessor, it erupted long before any of the other permanent teeth, but after all the temporary ones. It did duty with the temporary series, and now, years after they have disappeared, it is doing so with its permanent colleagues. As to the periods, when what I claim to be the first premolar is shed, there is, unfortunately, very little data on record. In the carnivora we have it in place long after the full adult dentition, and in the bears it is in place long after the second and third premolars have been lost.

In showing the inconsistency of those objecting, on the first ground, I referred to their treatment of the marsupials premolars; and, as doing the same for the second, I point to a special tooth in the same group—namely, the penultimate premolar, as seen in the larger species of *Macrobis* (kangaroos). This tooth is erupted very early in life—a young skull in my collection, in which the third upper incisor is just erupting, shows two cheek-teeth in place, the first, the tooth in question, with, to its distal side, the temporary molar. The first is shed, and its socket obliterated, in advance of the shedding of the temporary tooth.

In these species, its being so shed is thus not due to the eruption of a large last premolar (the reason given by Mr. C. S. Tomes in his Manual), but to the same cause, which, as the animal ages leads to the shedding of all the permanent cheek-teeth, except the third and fourth molars. Still there is now no hesita-

tion in recognizing this tooth as a premolar, although Owen regarded it as one of the temporary series.

In conclusion, I will just bring under your notice a remarkable peculiarity, occasionally met with in the first premolars, but seemingly rarely—namely, its being duplicated, that is, we have, besides the second, third, and fourth premolars, *two* first. This occurrence, I suspect, is not so rare as records would lead us to believe, as there are two in my own collection—one in the upper jaw of a Dingo, the other in a lower jaw of a Bear. In both it is on the left side only, and in both the one next to the canine is the larger, and I venture to throw out the suggestion, may this smaller tooth not be the first milk molar, which is normally suppressed.

COCAINE, AND ITS USES IN DENTAL SURGERY.

BY DR. ARTHUR O. GASK, ENG.

FROM the earliest dawn of operative surgery, the alleviation of pain during the performance of surgical operations, has engaged the attention of practitioners of the “healing art.” In the works of ancient writers, we find constant allusion to the need of some drug which should numb the senses of the unhappy victim for whose benefit the rude surgery of the times was called into play.

While ether and chloroform to a great degree satisfied the wants of the general surgeon, among practitioners of the minor branches of surgery the need still existed for some anæsthetic, the which while carrying with it an insensibility of certain facts should not nominate a general state of unconsciousness, but should be local in its properties; and when that branch of surgery to which we, gentlemen, have the honor to belong, emerged from out the dens of quackery, and the darkness of predental ages to take an honored stand amid the science, this need became more and more apparent.

The dental surgeon in pursuit of his calling, is compelled to submit his patient to many painful operations of a comparatively trivial nature, for which the administration of a general anæsthetic would be an absurdity, but which, when undertaken alone, are the occasion of much discomfort and pain, rendering a visit to the dentist's a thing above all others to be avoided. It was

for such cases that a reliable anæsthetic was to be desired, and thus, when in 1884, Professor Köller, of Vienna, demonstrated the practicability of the salts of cocaine as a local anæsthetic in operation on the eye, a hope arose among the dental practitioners that the long desired anæsthetic was at hand; and now, not only would the patient enjoy an immunity from pain, with the many inconveniences of a general anæsthetic, but also, the operator would obtain the intelligent co-operation of the patient.

A rush was made upon the drug, the cost of which fell in a short time, from three shillings a grain to less than as many pence.

But whilst with many practitioners the injection of cocaine in small doses satisfied all expectations, it soon became apparent that the employment of the drug in any but the very smallest doses was not without its dangers. Some persons it appeared possessed an idiosyncrasy to the drug which could not be determined beforehand, and so guarded against. In *some* patients the drug could be administered in very large quantities without the manifestation of any toxic effects whatsoever—indeed a German surgeon records a rectal injection of 48 grains with every success; in *other* patients, however, the injection of one grain, or even less, brought in its train symptoms of so alarming a nature, that, in one case at all events, artificial respiration had ultimately to be resorted to to restore the patient to a condition of consciousness.

Such disastrous consequences attending the injection of such small doses, had, as can be well imagined, a very sobering effect upon the generality of practitioners. Men began to look askance at a drug capable of producing such mischief, and cocaine fell into bad repute. But whilst many dropped almost all use of the drug, there arose another class of practitioners who stoutly defended its use, maintaining that in small doses, and with proper precautions, cocaine could be safely and advantageously administered. And then commenced a fierce controversy. Countless communications both for and against appeared in various journals. From the journals the warfare was carried to the learned societies, the papers and discussions before which, were the satisfactory means of proving that upon this subject at all events, no two gentlemen held exactly the same opinion.

And now as the years roll on, we seem as far as ever removed from any reliable estimation of the drug, and notwithstanding its having occupied a prominent position before the profession for

over five years,—notwithstanding the long series of careful experiments in the laboratories of competent physiologists, so many and diverse opinions are held that the anxious student setting forth upon his professional career and desiring to obtain certain information concerning the drug, may well pause before the mass of contradictory evidence heaped before him, and echo the old cry of Pilate, “What is Truth?”

On the one hand he will find those who on account of the unpleasant toxic effects to which it sometimes gives rise, refrain altogether from its employment, holding that the danger and uncertainty attending its use fully outweigh the advantages of any anæsthetic properties it may possess. On the other hand he will find those who make use of it on every possible occasion, and who employ it, not only for purposes of extraction, and for external application to the mucous membrane, but who also boldly inject it for the shaping of sensitive cavities, the drilling of retaining points, the extirpation of pulps, and for operations of a like nature. But leaving for one moment what I may call the controversial aspect, to which this paper is mainly devoted, I would briefly consider the properties of cocaine, and the uses to which it may be put in “dental surgery.”

Cocaine is an alkaloid obtained from the leaves of the *Erythroxylon Coca*, a native of South America. It is met with in various combinations, but it is in the form of the “hydrochlorate” above, that I intend to consider it this evening, the other combinations possessing no properties which render them, in any sense, superior to the hydrochlorate. Hydrochlorate of cocaine of the formulæ $C_{17}H_{21}NO_4 \cdot HC$ presents itself to us as a colorless crystalline powder readily soluble in water, alcohol and ether. Dissolved in water it is easily recognized by its peculiar bitter taste, and the subsequent feeling of numbness. It possesses powerful local, anodyne and anæsthetic properties, and is of some slight value as an antiseptic. Its physiological action is not at present fully understood; it is said to raise the temperature, quicken the pulse and render respiration more frequent. When administered internally, the blood pressure first rises and then falls. It is, of course, in its anæsthetic properties that we are chiefly interested. Cocaine is above all things an anæsthetic for the soft tissues, and in operation in the mouth affecting the mucous membrane, and the immediate subjacent tissues. Its salts

prove very efficacious. Its employment by the dental surgeon is restricted to two methods; by local applications of strong solutions and by hypodermic injection. Applied locally, a 10%-20% solution can be employed, but when used hypodermically the strength of the solution should never exceed 10%.

A 20% solution applied to the mucous membrane, on a piece of cotton wool, will prove of great service in wedging and separating teeth, in forcing the silk up in high conical edges, in removing portions of overhanging gum, in the treatment of "pyorrhœa alveolaris," in the lancing abscesses, and on many other occasions which will suggest themselves to the operator as occasion requires. Also a few drops on a piece of cotton wool applied to a carious cavity, will enable us to determine the seat of a probable exposure, and when found, to enlarge that exposure, and so permit of the escharotic accomplishing its work of destruction with a minimum amount of discomfort. Then, too, in single rooted teeth, it is very often possible to painlessly extirpate the pulp with external application alone, of course we must first obtain a good exposure. Again, in the treatment of those teeth in which the periosteum is so acutely inflamed as to permit of no manipulation whatever, we shall often find that a 20% solution applied to the gum, will in a few minutes greatly lessen the sensibility of the tooth, and will enable us with little discomfort to our patient to open up the canals and dress them. Lastly in the taking of impressions in the mouth which exhibit such an intolerance to the introduction of all modelling materials, painting the palate with a 5% solution, will in nearly all cases enable us to obtain a good impression, without any producture of that retching, so distressing to the patient, and so annoying to the operator. We shall of course find this treatment invaluable when we desire to obtain an impression of the soft palate.

It has been pointed out by some observers, that the employment of a cocaine-spray at the back of the mouth, if continued for some little time, is liable to produce a paralyzation of the superior laryngeal nerves, and as permitting of the saliva trickling down with the larynx and producing spasm of the glottis. The objection which many believe to be more fancied than real, at all events does not apply to any solution that we, as dental surgeons, may use in the fore part of the mouth, seeing that the amount of cocaine employed is so very small, and also by the

time it reaches the back of the mouth, it has become so very largely diluted with saliva that its anæsthetic properties are greatly reduced. However, "to make assurance doubly sure," we can when possible employ the "saliva-gestor," and allow the patient to swallow his saliva.

Bearing in mind its slight antiseptic properties, I have recently employed cocaine for relieving the after-pain of extraction, a $\frac{1}{4}$ grain compressed tabloid placed in the socket, will at all events for some hours, give a complete immunity from discomfort.

I will now pass to a consideration of hypodermic injection. Whilst local applications of strong solutions to the mucous membrane are always of great service, it is in the hypodermic injection that we shall see to best advantage the anæsthetic properties of cocaine. Now the successful injection of cocaine for purposes of tooth extraction, presents no little difficulty to the dental surgeon. We are dealing not only with surrounding soft tissues, but have also to overcome the physical barrier presented by the alveolus, and some little judgment is required to bring the operation to a successful issue. We have not merely to inject the solution beneath the mucous membrane, but to so inject it, that it may penetrate the porous bony tissue, and embrace in its anæsthesia the periosteum and nerves of the offending tooth. In fact, the injection requires as much care, as does the shaping of a cavity we are about to fill with gold. The syringe employed should work easily, and the needle be fine, sharp, and scrupulously clean. The introduction of a small fine needle will obviously occasion much less pain than the introduction of a coarse one. The needle should be rendered thoroughly aseptic previous to each operation, and one of the most certain methods of accomplishing this is to draw up through the needle a few drops of strong carbolic acid. The solution we inject must be perfectly fresh, inasmuch as the salts of cocaine once in solution rapidly decompose, a decomposition which without doubt accounts for many of the failures and unpleasant after symptoms, attending the early injection of the drug. I may here mention that for purposes of external application alone, a solution containing 5% of Saccharina can be very profitably made use of, inasmuch as the introduction of the Saccharina, not only overcome the unpleasant bitter taste, but also permits of the solution resisting decomposition for an indefinite period of time.

Returning to the subject of injection, the salt should be dissolved in water slightly warm, not hot, hot water favors a decomposition in which the anæsthetic properties of the drug disappear. The strength of the solution varies according to individual taste, from 4% to 20% solutions being employed. I myself have employed a 5% solution ($\frac{1}{2}$ grain to 10 minims of water) in some half-hundred cases with, on the whole, very satisfactory results. Previous to injection the gum, in the neighborhood of the teeth we are about to extract, should be dried, and a napkin folded round to exclude the saliva, in exactly the same method we should employ were we about to fill the tooth without resorting to the rubber-dam. By this means we can see clearly if our solution remains within the tissue, and does not escape back into the mouth through the puncture. All air must be expelled, from the syringe. A few drops of a 20% solution applied to the mucous membrane will render the puncture painless, and indeed, if we discharge one minim of the solution upon the immediate entrance of the needle into the soft tissues, the whole introduction of the needle can be accomplished absolutely without the patient's knowledge. It is generally advisable to inject in three places, and inasmuch as we shall obtain most of our anæsthesia through the outer and thinner wall of the alveolus, two punctures should be made on the labial aspect of the gum, and the remaining one of course on the lingual aspect. The needle should be inserted about 1-6th of an inch below the free margin of the gum, and driven obliquely, upwards or downwards, as the case may be, in a direction towards the apex of the tooth, until the mouth of the needle impinges directly upon the bony tissue. Great care must be exercised to penetrate through all the soft tissues, otherwise the current of our solution will be misdirected, and we shall obtain an anæsthesia of the superficial soft tissues alone, the periodontal membrane and nerves of the tooth remaining uninvolved. The needle once in position, and a finger being placed on either side and pressed forcibly down upon the gum to prevent any rising up of the soft tissues, the solution should be slowly discharged. Some little resistance is often offered to the entrance of the solution, but a steady forcible pressure will generally succeed in driving it home. Almost immediately upon the injection of the cocaine, we shall obtain a complete blanching of the gum in the neighborhood of the puncture, due without doubt to the

contraction of the capillaries. The solution injected, the needle should not be withdrawn for some few seconds, and when withdrawn, a finger should be placed over the puncture to prevent any escape of the solution. The full anæsthetic properties of the cocaine are not obtained for some six or seven minutes; we must therefore allow that time to elapse between the injection and the operation. It is generally advisable to place a few crystals of the salt just round the neck of the tooth to render painless the driving up of the forceps. The most convenient form of the hydrochlorate of cocaine for purposes of injection is that of the compressed tabloid—half-grain tabloids can be obtained at all the depots, by the employment of which we are spared all trouble of weighing.

Now the objections urged against the hypodermic administration of cocaine are two-fold.

1st, that it often fails to produce the required anæsthesia, and 2nd, that its injection even in small doses often gives rise to the very alarming symptoms of cocaine poisoning.

With regard to the first objection, the failure of cocaine in all cases to produce anæsthesia, from a series of experiments upon myself, and upon patients in this hospital and elsewhere, I am forced to the conclusion, that the production of a suitable anæsthesia by hypodermic injections of cocaine, almost entirely depends upon the manipulative skill of the operator. In my opinion, the anæsthesia is always present, but not always in the required situation; and hence will, where no careful investigation is made, escape detection. I am myself one of those unfortunate individuals whose dental organs present an entire lavatory for scientific investigation. I have but few teeth which do not on some surface or other bear evidence of that proficiency to which conservative dentistry has now arrived. At the beginning of the year, I was for some few days beyond the pale of dental mercies, and during that period, a dead upper canine took upon itself to occasion me no little pain. The tooth had been filled with a hard filling, and so I had no means of getting at the canal to insert a dressing. I had with me, however, a hypodermic syringe and some four grains of cocaine, and for the purpose of obtaining some temporary relief, I injected a half-grain from time to time. In the first injection, I altogether failed to obtain any beneficial results whatsoever, the tooth remaining just as sensible to pressure

after each injection. But the reason for this continued sensibility of was not difficult to find, for in each case I obtained an area of complete insensibility elsewhere. On the first occasion I obtained a complete insensibility of an almost entire half of the upper lip, so much so, that I was enabled to drive a needle in to a pretty good depth (a circumstance which, by-the-bye, I afterwards regretted when the effect of the cocaine had worn off); in the second injection, the area of insensibility was considerably higher up in the neighborhood of the nares. In the first injection, I had evidently not driven my needle through all the soft tissues, the current of my solution becoming thereby diverted; in the second case, I had driven my needle too far up. Now in both these injections, and in the latter one especially, had they not been made in my own mouth, an area of insensibility would in all probability have escaped notice, and discredit would have fallen upon the drug. The patient's attention would have been naturally concentrated upon the tooth itself, and any other feeling of numbness he might experience would be received as a matter of course. Since that time, in all those cases where I have not been successful in obtaining a full anæsthesia, and I must confess that I have sometimes not been successful, especially in my earlier injections, I have sought for an anæsthesia elsewhere, and have never been disappointed. In lower molars do we especially fail to obtain a satisfactory anæsthetic; their position in the mouth rendering injection somewhat difficult. In one such case, I obtained a good anæsthesia in part of the floor of the mouth. And so I would urge that in the employment of hypodermic injections of cocaine, for the purpose of obtaining a local anæsthesia, in order to secure success, much more dependence should be placed upon the method of injection.

With regard to the second objection, that with some the administration of cocaine is often accompanied with bad toxic symptoms, I shall not attempt to gloss over this unfortunate failing of the drug, nor to detract one iota from the importance of placing above all other considerations the safety of our patient, but in face of the small quantity of cocaine required to produce anæsthesia, and considering the vast quantities of the drug annually employed in all branches of surgery, we are surely justified in the employment of half-grain doses, where the toxic effects, if they do arise, are of so feeble and transcient a nature that we

shall have no difficulty whatsoever in coping with them. Moreover, their occurrence appears to be less frequent where weak injections are employed. Myself, I have never met with toxic effects in 5% solutions. It is, of course, necessary in dealing with all drugs of the dangerous nature of alkaloids, to adopt great caution, but if the physician in the course of his ministration is to employ only those drugs which can be administered with perfect safety, he must abstain from all use of many drugs of the greatest importance, and bring down his pharmacopœa to very narrow limits. The administration of comparatively small doses of quinine, will in some patients give rise to most distressing symptoms; in others, half the standard dose of arsenic will produce severe abdominal pain, and the smallest dose of mercury will, in some patients, bring on profuse salivation. Others exhibit a similar intolerance to opium; and so we can never be positively certain as to the ultimate consequences of any drug we may administer. If then, we are to condemn cocaine, to be consistent, we must never prescribe quinine.

Let us never administer cocaine to hysterical women; if so, we shall be unable to distinguish between the effects of the drug and the natural consequences following an operation in such patients. Obviously, too, we should not administer to patients known to be the subjects of heart disease; and on all occasions where we do employ cocaine, let us make it a "golden rule" never to administer more than half a grain upon the first injection.

Cocaine exhibits its bad effects by depressing the action of the heart, and producing dizziness, nausea, flushing of the face, periodical pain and palpitation, paralysation of the lower extremities, syncope, and death. Death has, I believe, occurred only once under administration of cocaine, and on that occasion in Russia, after a rectal injection of 23 grains. To counteract its depressant action on the heart, especially in weakly patients, Mr. Boyd Wallis dissolves the cocaine in absolute ether, being enabled under such conditions to employ a larger dose of the alkaloid without producing any unpleasant after-symptoms. Cocaine in all its forms is freely soluble in ether, and we shall without doubt find this method of solution of great service where we desire to extract several teeth at one sitting.

Should symptoms of cocaine-poisoning manifest themselves, we must treat them in the ordinary manner; place the patient in

a recumbent position and administer a stimulant; and one of the best and most certain stimulants we can administer is ether. Fifteen minims of ether, either alone, or in conjunction with same amount of aromatic spirit of ammonia, will rapidly restore the patient to a natural condition. Smelling salts can be applied to the nostrils. In bad cases, the inhalation of a few drops of nitrate of amyl may be resorted to. Coffee has been suggested as an antidote, but offers no advantages over ether, and of course requires longer time for its preparation.

And now I must bring my remarks to a close. In cocaine we possess without doubt a valuable therapeutic agent, capable of proving, with intelligent use, an immense boon, both to ourselves and our patients. An ideal drug it is not. It remains then for us to employ it to the extent of its utility, that they who come after us, looking back in the light of perhaps fuller knowledge, and beholding how we strove to cope with the sufferings of our age, deeming no labor lost in such a cause, shall learn in the history of the alkaloid cocaine, how when the first glamour heralding its birth into the world had passed away, and its shortcomings became apparent to all, it was not cast as a broken idol, upon the highway of knowledge, but faulty and imperfect though it was, became in the hands of those trained to careful and accurate observation, a means of lessening the anguish of the torments of a cruel Nature, and of detracting from the sum of human pain.

THE THIRTIETH ANNUAL MEETING OF THE AMERICAN DENTAL ASSOCIATION.

Continued from page 417.

THE REPORT OF THE SECTION ON DENTAL EDUCATION, LITERATURE AND NOMENCLATURE.

BY C. N. PEIRCE.

THREE new dental colleges have been organized since the last meeting and one has been disbanded. The total number of colleges now is thirty-three. Nine hundred and sixty-three students were graduated, one hundred and sixty-seven more than the previous year, a ratio of increase of three to one over the previous year. Three thousand six hundred and five students have graduated since 1885. This rapid increase in the number of

graduates of the dental colleges is an aggressive menace to the profession, and it is well for the profession to see to it that these men are properly qualified, especially since it appears that any one can get a charter, organize a school and graduate men on such standards as his faculty may elect.

The report approves of the idea of establishing a national museum at Washington and recommends the dental profession to be on the alert to see to it that in case a national university is established at Washington, that the dental department shall be one that will represent the highest idea of professional education.

It is important that this association give its moral support in some tangible way to those colleges that comply with the resolution of the National College Faculty Association requiring three full courses of study in separate years for graduation. The extended courses of instruction will offer an opportunity to present the fundamental principles of dental science in a manner that is not possible in the present brief course, and it is now possible to establish a higher standard for graduation.

The men appointed as examiners by the States requiring an examination of all who wish to practice in them, should be well educated men and of a high order of manipulative skill, as well as of the strictest integrity. The report recommended the appointment of a committee of five to consider the proposition to establish a National Board of Examiners to confer a special degree for high attainment in dental science.

There are at present between 90 and 100 dental societies in the United States. Every State but four has a State organization and some States have several local societies. These societies have a membership of nearly 3,000 members. Last year but 22 of these societies were represented at the meeting of this Association and these societies represented only 12 States. Three States contributed 75 of the 175 members of that meeting. This is not as it should be; every State and every society should send a representative to this meeting and, if necessary, defray his expenses. If this was done and such delegate would present a report of the doings of his society for the year, in such shape that it could be recorded under its proper section, a complete epitome of the progress of the profession for the year could be secured and could be recorded in the proceedings where it would be available for ready reference.

DISCUSSION OF THE PAPERS AND THE REPORT OF SECTION II.

DR. H. B. NOBLE, Washington, D. C.—I was much interested in the recommendation contained in the president's address that the State laws be made uniform. In Washington we would be very glad to get any kind of a law, as we now have none at all. The reason is that our law must be enacted by our national Congress and it is almost impracticable for us to convince the members of Congress of the justice of such a law and get them sufficiently interested to vote for it. If there could be a uniform law enacted in a large number of States, we would have little difficulty in convincing a majority in Congress of the importance of such a law for Washington. The members of this Association can aid us in this matter by interesting their congressmen in our behalf. The law we are now trying to have enacted is one compelling every one wishing to practice in Washington to pass an examination before an examining board appointed by Congress.

I am sorry to find that this Association is no more of a representative body than the statistics of the chairman of the section indicate. If the proposition to have one special delegate from each society is feasible, it ought to receive serious consideration.

E. PARMLY BROWN, New York.—This question of the unification of our State dental laws is a very important one and should claim the interest of the best element in our profession. Laws that compel every man, whatever his attainments may be, or however long and honorably he may have been engaged in successful practice, to submit to an examination by a board of examiners, appointed through political influence, before he can engage in practice, are wrong and unjust and should not be sanctioned by any influential dental society. If I wished to move to New Jersey and engage in practice, I would be compelled to submit to an examination by men to whom I taught the first principles of dentistry.

C. S. STOCKTON, New Jersey.—They have tried for a great many years to enact a uniform marriage law and failed. If a committee from this Association should in five years time be able to compile a perfectly satisfactory law, it would take twenty-five times five years to get the legislatures of all the States in the Union to enact it.

Years ago in New Jersey we had no law; then we got a law compelling all non-graduates to pass an examination before a

State board; then we tried to get a law allowing us to confer a degree, but in this we failed and are all heartily glad of it. We now have a law that compels every man wishing to practice in New Jersey to pass an examination, whether he is a graduate or not. This law works admirably to keep out unqualified men, graduates as well as non-graduates, but is no detriment to any man who is properly qualified. One graduate applied to the board for a permit who had a record of 100 in all his studies, but who did not know how to attach a cuspid tooth to a rubber plate and build up the inside cusp with rubber.

The method of conducting the section work of the New Jersey State Society is to appoint a person to read a paper before the society, which paper must be in the hands of the secretary three months before it is read so that any one else may be appointed and have time to write a second paper reviewing this paper and discussing the same subject.

DR. A. W. SMITH, Ky.—Did not see how the unification of the State laws could be accomplished, and if it could be, did not think it would have any tendency to secure greater proficiency in the men entering the profession.

The idea that the various societies sending delegates to this meeting should pay their expenses is a good one. It is no more than right that a man who is willing to give his time for the good of the profession should receive at least remuneration for his actual expenses.

DR. J. Y. CRAWFORD, Tenn.—In Tennessee we have no law to regulate the practice of dentistry. Is it not possible that the vast amount of discussion on this subject has been time wasted? Has the aggregate result advanced the standard of dental education correspondingly? An effective law must be based upon justice and equity, and because some of our laws lose sight of this great moral principle they are oppressive, unjust and do not accomplish the purpose for which they were enacted and can not be enforced. A lawyer who is admitted to practice in one State will have his papers accredited in any other; it ought to be so with the dental profession. Let us be generous, there is no danger of overcrowding the profession. If you were to equip every dentist in the United States with a set of scalers and turn them loose they could not begin to remove the tartar from the people's teeth. We need a higher standard of education, but we must

not lose sight of the great underlying principles of right and justice in our efforts to obtain it.

DR. J. B. STORY, Texas.—Wanted to know of Dr. Stockton if the young man learned to attach the plain cuspid to the rubber plate as instructed, (Dr. Stockton said he did). Then I say that young man ought to have been given a permit to practice even in New Jersey. A man graduating from college with such a record and being capable of appropriating instruction in that way is not going to be kept long in ignorance of ways of mere manipulation.

We have a law in Texas that requires the judge of each of the 47 judicial districts, to appoint three competent dentists to examine candidates for admission to practice. What troubles us is to find men to serve on these examining boards as we do not have as many dentists in the whole State. And then how is a district judge to determine who is competent? All these laws are faulty from the fact that political influence will secure the appointment of unworthy men on these examining boards.

Knowledge, not time, should secure a diploma and no college that does not act upon this principle should have its diploma recognized, but all those that do should have their diplomas accepted in any State in the Union.

DR. W. W. ALLPORT, of Chicago.—Dr. Story stated the case fully when he said that the diploma of any reputable dental college should be accepted as a passport in any State in the Union. This would be so if all colleges graduated men on the principle of sufficient knowledge, but unfortunately all colleges are not what they should be; they are in business to make money, not to educate dentists. Hence, it becomes necessary to have State examining boards to revise their work. In the State of Illinois any man can get a charter for a dental college for three dollars. Infamous and illiterate men take advantage of this fact for the sake of the money to be made out of it.

I am heartily in sympathy with the effort being made by the dentists of Washington to have a law regulating the practice of dentistry in the District of Columbia, passed, and I move that this Association request the United States House of Representatives to pass the bill that is now before it and which the Senate has already favorably acted upon. This motion was seconded and unanimously adopted.

DR. C. L. GODDARD, California.—The difficulty in the way of enacting uniform State laws lies in the fact that all these laws are the result of a process of time and evolution. The only way to unify these laws would be by national legislation. In one instance the State Board of Examiners of California admitted to practice nine men, two of whom had been rejected by the dental department of the University of California and the other seven were undergraduates.

DR. P. T. SMITH, Colorado.—Laws do not increase our moral standards. They are physical processes which hold us in check, but do not educate us morally.

The eloquent and beautiful paper of Dr. Thompson, with its luteal and soothing influence, which almost lulled us to sleep, had nothing in it to which we can object, or criticise; we can only applaud its sentiments. But the paper of W. H. Atkinson was one that will cause us to think. It not only gives us the foundation principles of all moral activity, but accounts for the inspiration that is inborn to us, enabling us to attain to higher degrees of perfection in any noble calling. It is our duty to bring to bear upon our every day calling the fundamental principles which govern our being and accounts for its inspiration; it is only when we do so that we are enabled to apply such agencies as will tend to perfect the highest and best attainments of which we are capable. The chemical constituents of our bodies are only the vehicles or media through which our spiritual natures are manifest, and a lack of this media or an imperfect combination will in due proportion affect the symmetry and harmony of our being. So it is in practical education, the moral as well as the scientific and practical must be considered in their proper relations in order to reach the highest standard of education.

DR. JAS. TRUMAN, Philadelphia.—This is a very important period in the transition of dental laws. Sometimes laws are oppressive and tyrannical. When they become so it is time to repeal them. I am not opposed to dental laws but believe in them; but at the same time our laws should be based upon justice and equity. I would favor the adoption of a uniform dental law in all the States.

Our attention has been called to the manner of imparting instruction in colleges. As an old teacher, I wish to say that a man who cannot stand before his class and present his subject in

clear plain language that can be readily comprehended, is no teacher and should step down and out. The fundamental principles of dental science can and should be stated in language that will command the attention of the student and fix the idea upon his memory at once. I have sometimes wished that all lecturing could be dispensed with and some practical method of imparting instruction adopted.

This Association meeting is a great educating medium and should be more universally attended. I would not miss one of its meetings for a great deal. We should not only attend the meetings of our societies and help to make them profitable, but we should patronize the literature of our science. The great work which Dr. Farrar has put so much time and money into, ought to be in the library of every dentist though it should cost him a hundred dollars, which it will not.

DR. J. N. CROUSE, Chicago.—Made a statement as to the condition of the affairs of the Dental Protective Association, and asked that a committee of four persons representing different sections of the country be appointed to examine the Dental Protective Association as to its methods of doing business, its investments, accounts, etc., and report at the next meeting.

The suggestion of Dr. Crouse was approved and the president appointed Drs. J. Y. Crawford, W. W. Walker and Frank H. Gardiner. The other member to be afterwards appointed by the president.

On motion a committee of three consisting of Drs. W. H. Atkinson, J. D. Patterson and C. L. Goddard were appointed by the president to protect the interest of the profession in the case that has been appealed from the New Hampshire Supreme Court to the Supreme Court of the United States, involving an adverse decision to the State dental law. The committee was authorized to employ counsel if thought necessary and draw upon the treasury of the Association for a sum not exceeding five hundred dollars.

To be continued.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

THE seventh annual session of the National Association of Dental Faculties was held at Excelsior Springs, Mo., commencing Monday, August 4, 1890.

The following colleges were represented :

Baltimore College of Dental Surgery, M. Whilldin Foster.

Boston Dental College, Wm. Barker.

Chicago College of Dental Surgery, Truman W. Brophy.

Kansas City Dental College, J. D. Patterson.

Missouri Dental College, W. H. Eames.

Ohio College of Dental Surgery, H. A. Smith.

Pennsylvania College of Dental Surgery, C. N. Peirce.

University of California, Dental Department, C. L. Goddard.

University of Iowa, Dental Department, A. O. Hunt.

University of Michigan, Dental Department, J. Taft.

University of Pennsylvania, Dental Department, James

Truman.

Vanderbilt University, Dental Department, D. R. Stubblefield.

Louisville College of Dentistry, A. Wilkes Smith.

Indiana Dental College, J. R. Clayton.

Dental Department of Southern Medical College, L. D. Carpenter.

Dental Department of University of Tennessee, R. B. Lees.

University of Maryland, Dental Department, John C. Uhler.

Columbian University, Dental Department, H. B. Noble.

On motion, Dr. J. D. Patterson, Kansas City, was elected secretary *pro tem*.

The following resolution, offered by Dr. Hunt, was adopted :

RESOLVED, *That in all colleges of this association students to be graduated at the expiration of two years after admission must enter the school not later than twenty days after the opening of the regular session following the meeting.*

The amendment to the constitution laid over from last year, providing for changing the name of the association to American Association of Dental Faculties, was lost.

Applications for membership laid over last year, under the rules, were taken up and the following were admitted: Royal College of Dental Surgeons of Ontario; College of Dentistry, Department of Medicine University of Minnesota (represented by Dr. W. X. Sudduth); American College of Dental Surgery (represented by E. P. Hazen).

The following applications for membership were laid over under the rules: Dental Department of Howard University, Washington, D.C., and College of Dentistry, University of Denver.

The resolution offered by Dr. Patterson and laid over last year under the rules was taken up, amended, and adopted as follows :

Resolved, That after the session of 1890-91 a diploma from a reputable medical college shall entitle its holder to enter the second course in dental colleges in this association, but he may be excused from attendance upon lectures and examinations upon the following subjects; general anatomy, chemistry, physiology, and materia medica and therapeutics.

Dr. Marshall's amendment to the constitution, providing that in all matters not in conflict with Article V of the constitution a majority of the colleges belonging to this association shall constitute a quorum, was taken up and adopted.

The following resolution, offered by Dr. Hunt, was adopted :

Resolved, That we recommend that students take two full courses in studies of a general character, such as anatomy, physiology, chemistry, general principles of surgery and materia medica and therapeutics, and three courses in those of a special dental character.

Dr. Goddard offered the following resolution, which was adopted :

Resolved, That final examination may be taken at the end of the second year in three general studies.

The following, offered by Dr. Truman last year and laid over under the rules, was adopted :

Recommended, That for a full annual course of lectures the minimum sum of college fees be \$100; that diploma fees be omitted, and an examination fee of not less than \$25 be substituted therefor and made non-returnable; that a matriculation fee of \$5 be charged annually. Special course fees to be \$10 for each branch taken, and \$5 matriculation fee.

The following officers were elected for the coming year: L. D. Carpenter, Atlanta, Ga., president; W. H. Eames, St. Louis, Mo., vice-president; J. D. Patterson, Kansas City, Mo., secretary; H. A. Smith, Cincinnati, O., treasurer; J. Taft, Cincinnati, O., Truman W. Brophy, Chicago, and A. O. Hunt, Iowa City, Ia., executive committee.

The following committees were appointed: James Truman, Philadelphia, Frank Abbot, New York, and John S. Marshall, Chicago, *ad interim* committee; J. A. Follett, Boston, D. R.

Stubblefield, Nashville, Tenn., A. Wilkes Smith, Richmond, Ky., C. L. Goddard, San Francisco, committee on schools.

Adjourned to meet on Saturday, August 1, 1891, at 10 o'clock A.M., at the place appointed for the next meeting of the American Dental Association.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

THE ninth annual meeting of the National Association of Dental Examiners was held at Excelsior Springs, Mo., commencing Monday, August 4, 1890.

The following State boards were represented :

Colorado, Dr. P. T. Smith.

Illinois, Dr. C. R. E. Koch.

Iowa, Drs. S. A. Garber, E. E. Hughes, and E. D. Brower.

Pennsylvania, Dr. Louis Jack.

Maryland, Dr. T. S. Waters.

Kansas, Drs. L. C. Wasson and A. M. Callaham.

Ohio, Drs. J. Taft and H. A. Smith.

Minnesota, Dr. J. H. Martindale.

During the sessions the Board of Registration in Dentistry for the State of Rhode Island and Providence Plantations represented by Dr. Wm. P. Church, was elected to membership.

Dr. T. S. Waters presided in the chair and in the absence of the secretary, Dr. F. A. Levy, Dr. J. H. Martindale, of Minnesota, was elected secretary *pro tem*.

After discussion, the following resolution, offered by Dr. Jack and amended by Dr. Koch, was adopted, on motion of Dr. Taft :

Resolved, That this body recommends the various examining boards under no circumstances to grant temporary licenses to dental students at any period of their course of instruction, whenever their State laws will permit them so to do.

Drs. Jack, Garber, and P. T. Smith were appointed a committee to formulate the principles which this association would recommend should be incorporated in the State laws. This committee subsequently presented a report which, as amended and adopted, recommended the following principles for incorporation in laws for the regulation of dental practice or for the guidance of those framing them :

1. The creation of boards of examiners in each State.
2. The boards to be officially created by the constituted appointing power of the various States, the appointees to be selected from a number of names presented by the representative State societies; each State society at its annual meeting placing in nomination not more than two names for each appointment to be made.
3. Recognizing five years' actual practice at the time of the passage of the law as qualifying for the continuance of practice.
4. Empowering the examining boards to examine and grant certificates to non-graduates, provided the candidates present satisfactory evidence of having had at least five calendar years of instruction.
5. These and all other examinations to be both oral and written, and candidates to be also subjected to tests of practical skill.
6. Empowering the boards to examine graduates in dentistry.
7. Prohibiting medical graduates without special qualifications practicing dentistry.
8. Requiring medical graduates to have their special qualifications determined by the same tests as other non-graduates in dentistry (see No. 5.)
9. Making failure to pass the required examination in any one branch sufficient cause for refusal to grant the certificate.
10. Making failure in the practical tests in either of the two general departments of dentistry work disqualification
11. Expressing the opinion that examinations for the special degree in dentistry should be conducted by a board of examiners established by law in each State, instead of by faculties as at present; and the belief that the power to grant degrees must at length become vested in boards created for the purpose.
12. Conferring on State boards the power to revoke, for cause, a certificate of qualification previously granted.

The secretary was directed to call the attention of the American Dental Association to the fact that a case involving the constitutionality of the law regulating the practice of dentistry in New Hampshire is now pending in the Supreme Court of the United States, and asking them to see to it that it does not go by default.

Dr. Koch, from the committee on dental colleges, reported the following schools the diplomas of which this association recommends that the State boards indorse:

American College of Dental Surgery, Chicago, Ill.

Baltimore College of Dental Surgery, Baltimore, Md.

Boston Dental College, Boston, Mass.

Chicago College of Dental Surgery, Chicago, Ill.

College of Dentistry, Department of Medicine, University of Minnesota, Minneapolis, Minn.

Dental Department, Columbian University, Washington, D.C.

Dental Department of Northwestern University, Chicago, Ill. (Now University Dental College.)

Dental Department of Southern Medical College, Atlanta, Ga.

Dental Department, University of Tennessee, Nashville, Tenn.

Harvard University, Dental Department, Cambridge, Mass.

Indiana Dental College, Indianapolis, Ind.

Kansas City Dental College, Kansas City, Mo.

Louisville College of Dentistry, Louisville, Ky.

Minnesota Hospital College, Dental Department, Minneapolis, Minn. (Defunct.)

Missouri Dental College, St. Louis, Mo.

New York College of Dentistry, New York, N. Y.

Ohio College of Dental Surgery, Cincinnati, O.

Pennsylvania College of Dental Surgery, Philadelphia, Pa.

Philadelphia Dental College, Philadelphia, Pa.

School of Dentistry of Meharry Medical Department of Central Tennessee College, Nashville, Tenn.

St. Paul Medical College, Dental Department, St. Paul, Minn. (Defunct.)

University of California, Dental Department, San Francisco, Cal.

Northwestern College of Dental Surgery, Chicago, Ill. (The diplomas of this college are discredited after 1889.)

State University of Iowa, Dental Department, Iowa City, Ia.

University of Maryland, Dental Department, Baltimore, Md.

University of Michigan, Dental Department, Ann Arbor, Mich.

University of Pennsylvania, Dental Department, Philadelphia, Pa.

Vanderbilt University, Dental Department, Nashville, Tenn.

The following officers were elected for the ensuing year: C. R. E. Koch, Chicago, Ill., president; L. C. Wasson, Topeka, Kan., vice-president; J. H. Martindale, Minneapolis, Minn., secretary and treasurer. The president appointed as the committee on dental colleges, Drs. Louis Jack, T. S. Waters, E. E. Hughes, W. P. Church, and J. H. Martindale.

On motion, the following committee was appointed to consider the advisability of holding the meetings at some other time and place than the annual meetings of the American Dental Association, with discretionary power in the matter: Drs. J. Taft, F. A. Levy, and S. A. Garber.

Adjourned to meet at the call of the president.

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

METAL DIES.


BY DR. D. GENESE, BALTIMORE, MD.

OF all metal for dies used in swaging dental plates, I have found none so reliable as zinc, tin and lead; but these metals want careful handling to obtain the best results.

Zinc requiring a high temperature for fusing, had been found fault with and many attempts made to supersede it. After 26 years I fail to find its superior for the male die, and in cases with no undercuts for the female also. This metal can be poured as easily as tin by the following process:

Always use a large ladle, and plenty of metal, heating up with a brisk fire or good gas furnace. Should the zinc be lumpy or old and covered with oxide make it a dull red heat before removing from the fire; remove the ladle from the fire to the open air away from any building or under a draught at a flue; have ready $\frac{1}{2}$ an ounce of hydrochloric acid, and pour it gradually into the hot zinc (taking care to get to windward of the fumes); have an iron rod to stir the mass, and it will soon be found that the oxide will rise and a clean liquid metal remain at

the bottom, keeping bright and flowing for a long time, sufficiently so to return to the workshop and pour without dross or bubbles, and with a smooth, clean surface so dense that hammering gold onto it will not bruise the fine surface.

Casting sand should be moistened with water in which a little sugar is dissolved, it binds better and takes a clean impression. The closer the sand is pressed the better will be the impression, but it must be left longer to dry, not in an oven, but on a high shelf in warm air. To prevent air becoming pressed in the bottom, groove the back of the mould thus  and the cast will come out perfect, besides the groove of metal acts as a guide in placing the dies together.

A counter die should be used first of lead, but before using it should be wetted with water and glycerine 5 to 1, this prevents lead sticking to the plate and is better than linen between the moulds. Annealing should always be done before each time of putting the plate between the dies, and all metal plates should be worked bright and never heated without first steeping in the proper acid to remove any particle of inferior metal. A zinc counter die can be made by simply putting French chalk over the die proper.

Tin counter dies give a sharp plate, but are apt to scale and get into the zinc spoiling its hardness, lead will also do this, therefore always wet the zinc as above and the plate to be swaged also.

The metals for dies and counters must be kept wide apart and in separate ladles or the zinc die will have soft spots causing faulty plates.

Metal plates should be carefully cut to patterns, using soft sheet lead for the purpose, the lead foil must be worked upon the zinc die so that it represents *exactly* what is wanted in the finished plate, and without cracks or rough edges. When this is satisfactorily obtained slightly warm the lead pattern to make it soft and proceed to flatten out, *don't crease it* but burnish it out with a round wood point, mark the top that you may know which side to work the gold from and then cut exactly to pattern. Plates can be made with little or no waste, and without cracks or trouble in swaging as the gold is sure to be exactly the size required.

Plates are better if pressed by screw power press than if hammered with the horn mallet, and the sharp rugæ should be

always chased up with bone points oiled, and pressed again after annealing. Investing material should be plaster, pumice and marble dust, equal parts by weight or Teague's impression compound which will bear a white heat without cracking.

REPAIRING BROKEN BRIDGE-WORK.

FIRST supposing that the backing and flushing is of a substantial nature, cut off any projecting pins that may be remaining, then with a suitable corundum point in the dental engine, grind off remainder of pins and sufficient of the backing to remove any convexity of surface that might remain at that point; this is to allow the new tooth to fit close to the backing, and to remove any strain, as it is always the greatest just there.

Select a suitable tooth, which must be one of Ash & Sons' (as American teeth do not possess the requisite length of pins, besides possessing the disadvantage in this case of having said pins alloyed with iridium, which would render them much too stiff to work well, which is not the case with Ash & Sons' productions). The next step is to find where the pins are to penetrate the backing, drill the holes with a spear-pointed drill lubricated with glycerine or vaseline. This will simplify this otherwise tedious process. After the tooth has been let down nicely with a fine fissure bur lubricated as before described, cut two grooves laterally, just beyond the pin-holes, on the palatal side of the backing, extending beyond the pin-holes vertically, and then with the right angle carrying an inverted cone bur of a suitable size, remove sufficient of the backing between the lateral grooves to form as it were a small dove-tailed box. Replace the tooth, then with a suitable instrument (I use a pair of curved excising forceps) bend the pins together, the ends passing each other, drawing them firmly against the bottom of the recess, pack with soft, quick-setting amalgam, and polish when set. In some cases a small amount of oxyphosphate between the tooth and backing will be found an advantage.

This method will be found to produce the most satisfactory results, as its practice for upward of five years has failed to develop anything to its disadvantage.—DR. W. MITCHELL in *Dent. Review*.

IMPRESSIONS FOR PLATE MAKING.

As we all know, the dove-tail *inter-dental* spaces are the points of greatest difficulty. I have lately struck a method by which the most difficult partial impressions are greatly simplified.

I had a very bad case, requiring the two laterals and a bicuspid, all the palatal surfaces being very bulging. I tried several of the usual methods, and failed. The question then occurred to me, Why not obliterate these spaces *by the teeth required*? So I first selected the teeth and ground them up, and after drying the adjoining surfaces I waxed them in place with hard wax. I readily took the impression, afterward removing and placing the teeth in their positions. As you will see, this method requires no articulating out of the mouth, simply putting the wax plate in position and flasking the case. This week I took an impression of a very difficult case for the two laterals, the other teeth being much denuded at the necks. I ground up the teeth and simply sprung them into place, no wax being needed, and then very easily took a most perfect impression.

The advantages of this method are obvious. Besides dispensing with articulating and trying in, you can see exactly how the teeth are as to size, shape, and shade, and they cannot move out of place, being securely fixed by the impression.

I would not recommend this method for universal adoption; it is chiefly for difficult cases; and in such I have found not only nothing better, but nothing half so good. It is especially applicable where there are small spaces. Where there are spaces articulating three or four teeth, it is not so good. I have used it with gum teeth and plain teeth, but it is better for the latter. I set them as firmly against the gum as possible. They can be removed afterward, trimmed a little, and set up still higher by having them a trifle long at first.—DR. A. G. BENNETT, *Cosmos*.

A PRACTICAL METHOD OF ELECTRO-GILDING GOLD DENTURES, BRIDGE-WORK, AND COLLAR CROWNS.

FIRST prepare in the following manner a stock solution of gilding fluid. (1) Take of pure gold 30 grains and digest in aqua regia ($\text{HNO}_3 + 3\text{HCl}$); (2) evaporate *almost* but not quite to dryness; (3) dissolve this in twenty ounces of water; (4) then add half ounce of cyanide of potassium. This fluid will last a long while, and should be kept in a bottle ready for future use at any time.

To Gild: Heat gilding solution in jar in saucepan of water to about 150° Fah. While this is heating, polish the denture with whiting, wash well with plenty of soap, and place it into a basin of clean water; then avoid handling or exposing it to the air.

Attach to the positive electrode a thin sheet of fine gold, which should be not less in area than the piece to be gilded.

To the negative electrode attach the denture. When the gilding solution is heated, place the positive and negative electrodes with their attachments into it.

In a few minutes a dull brownish yellow deposit will be found on the denture. Polishing on the lathe with whiting will produce a rich deep gold appearance, giving the plate uniformity of color, obscuring the distinctness between it and the solder, and giving a perfectly finished aspect which lasts for many years.

By using a battery of six (1 quart) Leclanche cells and keeping the sheet of gold always attached to the positive electrode, a piece can be gilded at any time in a very few minutes.—H. FIELDEN BRIGGS, *Dent. Record*.

MENDING BROKEN PLATES.

I HAVE not patched a badly fractured or broken plate for some time, but reproduce the plate as follows: Bring the parts together as for mending, oil the palatine portion of the plate, and pour on plaster. After thoroughly hard separate the plate from the cast, being careful not to injure the cast while doing so. Now, with file, or lathe bur, remove the rubber rim above and back of the teeth, so that the teeth can be easily drawn from the cast without danger of fracturing, which can be determined by trying. Next, place the parts on the cast in their correct position, wax up as the original plate was, and flask as for a new case. When hard, open up and remove the wax; reclose the flask again and fasten firmly with bolts or clamps. Heat by dry heat in a cast-iron porringer, or, what is better, a dry air celluloid machine, till the rubber is soft; open up the flask, grasp the old plate by the heel with a pair of pliers, and remove carefully; pack and vulcanize as new work. I can as readily get five dollars for this work as I could two or three for patching, and it is much more satisfactory to both dentist and patient.—DR. W. H. STEELE, *Items*.

CONES AND WHEELS FOR POLISHING.

NICE cones and wheels for the laboratory, which are much more durable and satisfactory than either felt or cork, can be made by any dentist. Turn out of good dry cotton wood the sizes and shapes you want. Then cut from good, heavy chamois skin pieces of right size and shape to cover the cones and wheels you have ready; shave down the ends of the strips thin; now coat the side going next to the wood with this cement: Glue, five parts; rosin, four parts; red ochre, two parts; mixed with the smallest possible quantity of water. When mounted, lay in a cool, dry place till the cement is thoroughly set. If the instructions are followed, they can be used for carrying any polishing material wet with water.—DR. W. H. STEELE, *Items*.

HEATING FLASKS FOR RUBBER PACKING.

DR. C. F. NOYES writes: Allow me to make mention of a very convenient device for use in packing rubber, which I venture to say is not in common use. It is the common soapstone "pancake" griddle. By placing your flasks upon the griddle, then together over the source of heat, your flasks will be warmed *gradually* to the degree that you may require. It can then be removed to the bench and the soapstone will *retain an even degree of heat* during the time of packing. The rubber may also be kept in a good manipulative condition by placing it upon a common baking tin and placing upon the griddle. Two griddles would be much better; one for the flasks and one for the rubber, but you can get along very nicely with one.

MAKING FINE FILES.

IT is sometimes found convenient in doing crown and bridge-work to have very fine files of odd shapes, to dress up difficult places. I got my idea from an old jeweler's work, and it will be found useful. Dress up a piece of wood file shape, a half inch wide, and glue to this a piece of emery paper, the grade of grain you wish your file. Next, shape your file as you wish it, of the best cast steel, and, before tempering it, pass your emery paper across several times, diagonally. Temper by heating to a cherry red, and plunging into linseed oil.—DR. W. H. STEELE, *Items*.

CUSPS FOR BRIDGE TEETH.

I DO not see the object of making molded cusps. It is three or four times as much labor as it is to make a swedged cusp from a thin nice piece of 22 carat gold, you can swedge out a great many in a short time, and with your blow-pipe or gas jet fill with solder, and you can leave them slightly concave. If you have a molded cusp, it must be ground or it don't fit at the top of the tooth. You don't get a good adjustment unless you grind it away considerably. It is a difficult thing, and I don't see any special advantage that can possibly be derived from it.—HUNGERFORD, *W. D. Jour.*

TAKING IMPRESSIONS.

IN taking impressions, especially of upper cases, I always found, when putting the finger up to hold the cup, that the cup would slip forward. To obviate this, I have had a piece of tin soldered on to the under part of the cup so that my finger rests against it, and the tendency is to press the cup back all the time.—DR. E. A. STEBBINS.

RENEWING ZINC FOR DIES.

WHEN the zinc used for dies gets thick and unsatisfactory, place it in the melting ladle and heat to dull redness, when a tablespoonful of strong hydrochloric acid thrown on it whilst stirring with a stick or an iron rod, will instantly render the zinc perfectly fluid and equal to new metal.—FLETCHER, *Archives.*

ANSWER TO QUERY.

IN OHIO JOURNAL, Sept. number, p. 428. The only method which I have found to give entire satisfaction where a plate will not stay up and is continually dropping down: have patient come to your office the day his plate inclines to drop the most; prepare a glass of cracked *ice*; have patient to fill his mouth full of *ice* and as it melts keep repeating the process for about ten minutes, then take impression. I would recommend continuous-gum plate above all others, gold next and would not return to rubber until the last resort.

G. B. MARTIN, D.D.S.

INDIANAPOLIS, IND.

Editors' Specials.

"Write the Vision and make it plain."

PROGRESS AND CIVILIZATION.

HISTORY is made more rapidly than in years gone by. Our own specialty illustrates this fact. Within the memory of the writer artificial teeth were made of bone or ivory, and to adapt them to the mouth a piece of silver wire was bent to the general shape of the gum, the ends of it being curved around natural teeth to hold the denture after the manner of clasps. A short piece of wire was made to extend to each artificial tooth. The various parts were fastened together with tinnern's solder, composed of tin and lead. They were, with propriety, called "false teeth."

And it is worth while to observe that our progress has been not only rapid, but symmetrical. No one department has fallen far behind. There was reason for anxiety in this respect a few years ago. The "cheap Johns," who had learned to boil rubber, for a time degraded the department of mechanical dentistry, and it was further degraded by leading dentists, in disgust, turning over their plate-work to their pupils, or other equally irresponsible help. This was worse than the rubber boilers; and something had to be done. A crisis was reached when a prominent member of a leading society proposed, in good faith, to exclude mechanical dentistry from the curriculum of dental study. This awakened attention. The readers of the OHIO JOURNAL will remember the tribulations of "Mr. Hypothetical," in his endeavors to get an artificial denture from a "Dr. Nofitz," and failing every time, till he fell in with "Dr. Geofield."

From that time mechanical dentistry has been known as dental prosthesis, whatever that means, and there has been a boom in prosthetic dentistry which has brought it nearly, or quite up to the standard of operative dentistry. Thus we are warranted in stating that our professional progress has been symmetrical as well as rapid.

Early in the career of our profession, a fair knowledge of general pathology was recognized as a necessity, and some of the best teachers in our profession were engaged in teaching it. To verify this statement it is necessary only to name Profs. Bond, Mendenhall, and J. B. Smith, some of its early teachers.

Of course all the time anatomy and physiology were not neglected. According to our observation the dental schools gave as much attention to, and as thorough a course on anatomy as did the medical. True they were not identical. The dental teacher gave a more minute attention to the face, while the medical teacher devoted more time to the abdominal and pelvic regions.

As chemistry was the science mainly neglected by the medical profession it was to be expected that it would be, to some extent ignored in making up the curriculum of dental study. And this seems the more probable in view of the fact that the first man that tried to arrange a course of lectures adapted to the wants of dentistry is still living.

But it is not necessary to call further attention to the remarkable progress of our profession. We are already aware of, and proud of it. We boast of it, and thereby eulogize ourselves. And we might boast and eulogize if it were the only department of life that is progressing. But progress is everywhere, and is written on all things. In agriculture, and the mechanic arts it is manifest. In electrical science more progress has been made in the last ten years, than in all time preceding. In navigation, and in all kinds of locomotion, the present eclipses the past till no comparison will illustrate. Cities are made in a day. Nations are born in a year. In short, so rapid are all improvements, that, as a profession, society and civilization hold us responsible for duties that they could not claim, even a quarter of a century ago. And the responsibilities we must recognize and discharge, or fail as a profession.

But we aimed for a paragraph, and the subject grows. Boys sometimes bite off more than they can chew. We fear we have made a similar miscalculation.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

BRACKET TOP.—DR. CATCHING suggests covering the top of your operating-table with heavy white paper, over which lay a good plate of glass, with a raised moulding around the edge. This is easily kept bright and clean, and your points are plainly visible.—*Int. Jour.*

TO CLEAN THE TEETH.—A. GAWALOWSKI (*Oel und Fet. Ind.*) recommends rubbing black or spotted teeth with cuttle-fish bone made into a stiff mass by mixture with a 4 per cent. solution of hydrogen peroxide. After using, the mouth should be rinsed with water. In this way the teeth may be whitened in a few minutes, and it is said that the operation will not injure the enamel.

EXTRACT OF HAMMAMELAS FOR THE GUMS.—A patient who had lost all of his upper and most of his lower teeth from Riggs' disease and for which he had been treated by a noted dentist without success, has arrested further loss by the use of "Pond's Extract," simply rinsing the mouth daily with the clear extract. His gums are in perfect condition at present. It was recommended to him by a friend who had used it for the same purpose.—L. P. HASKELL.

TO REDUCE NERVE BROACHES.—I have a little device which is used to reduce to any infinitesimal size nerve broaches, which we all find so necessary. It is nothing more than taking a soft steel and rubber packing and placing between them emery disks, and by placing the small broach in between this and revolving it, it cuts it down to any size desired. If you will try it, you will find it one of the most useful things you ever had in your office, and the means of removing the pulp from the finest canals. It has given me more satisfaction than anything else I have in my office.—DR. BONWILL, *Int. Jour.*

DENTAL LAWS.—To my mind the only law out of which there can grow no contention or dissatisfaction is simply one that requires each practitioner, on entering a State or on entering the practice in any State, to record in the county clerk's office a diploma from a reputable dental college or university authorized to grant dental diplomas, and a positive refusal of the right to practice to all who cannot register such a diploma. With such laws as these in force, and the "high enough" standard for graduation maintained in the colleges, ignorance and incompetency must pass away with this generation, and with them the necessity of examining boards, with all the wrangle and dissatisfaction which they have engendered.—DR. J. C. STOREY, *So. Dent. Jour.*

IODINE DRESSER.—Mr. J. Dennant (Brighton), exhibited a contrivance which, though very simple, he had found very useful. He called it an Iodine Dresser. Most practitioners had doubtless experienced the difficulty that patients had in applying iodine to their gums, they generally stain their lips, and practitioners also stained their fingers. This contrivance, which could be made at an extremely small cost, consisted of a stem of black vulcanite with a slot at the top end, into which a little wool is twisted, and perfectly avoided the staining alluded to.

Mr. George Brunton mentioned that *tinctura iodi decolorata* does not stain the gums.

Mr. C. Robbins stated that he used a still cheaper instrument which answered the purpose: he always instructed his patients to use a common match.—*Dent. Record.*

DR. ELLIOTT ON ANTIFEBRIN: At the time I took up this subject, six months ago, it was to me quite new; my attention was called to it by a physician who was using it very largely in neuralgia. In my opinion we have no remedy which approaches in value this agent. I have used it in fifty cases, and in forty-five of them have been successful,—that is, in reducing within a few hours the pain of advanced periodontitis.

I cannot give you accurate details, because I could not carry the record as far as I wished, but, in my experience, it is superior to the local application of either aconite or iodine.

I always confine my treatment to two doses of ten grains each, and the pain is almost immediately relieved, and there are no ill effects from it as from the use of opiates. I took up the

use of another substance, phenacetin, a medicine of like character, but the antifebrin has been the most successful.—*Inter. Jour.*

PULP CAPPING.—The material I use most in capping exposed pulps is made according to Flagg's formula for zinc sulphate. The powder consists of calcined sulphate of zinc, pulverized to an impalpable powder, one part, and calcined oxide of zinc two or three parts, and these thoroughly triturated.

The fluid consists of gum arabic 15 gr., water $\frac{1}{2}$ ounce; after it is thoroughly dissolved add one gr. of sulphite of lime and filter.

The parts should be kept dry and a thin mix made of the cement, and a portion placed accurately over the point of exposure and the frail dentine surrounding it.

A short time should be allowed for the capping to harden, when it may be covered with oxyphosphate or any suitable non-conductor, to give sufficient depth of non-conducting filling to break off thermal changes. The balance of the cavity may be filled as indicated.—DR. L. F. KELLOGG, *Dent. Review*.

PRELIMINARY EXAMINATIONS.—As the dental colleges will soon reopen for the winter with numerous applicants for admission to college halls, we respectfully ask the governing authorities to exercise their prerogative and fail not to reject unfit applicants for entrance into college. From conversation with recent graduates we fear that too many are entering the ranks totally unfit by previous education to become ornaments in the profession. We would suggest the advisability of employing teachers of the high schools as examiners, in order to check the too easy entrance upon professional study. There may be fewer students, but this world will not suffer if the quality be improved at the expense of quantity. No one, we presume, so well knows from actual experience the illiteracy of many dental graduates as the editor of a journal. Correspondence and the submission of papers discloses this fact better even than a short conversation. Gentlemen of the faculty, do your duty, although college revenues are curtailed and professors' salaries are reduced.—*Editorial Dent. Review*.

SENSITIVE DENTINE OBTUNDING.—Some time ago it occurred to me that a blast of nitrous oxide, under high pressure, thrown on a tissue might have the effect of producing local anæsthesia

by depriving the tissues of moisture and thus rendering them insensible to pain. The pressure of the gas in the cylinders, in which it is supplied in the liquefied form, is at ordinary temperature about one thousand pounds to the square inch; that is, when the cylinder is full. This is ample for the purpose. I have attached to a cylinder an apparatus which I have devised for the application of the gas, consisting of a flexible tube of sufficient strength to withstand the enormous pressure. The gas is forced, on opening the valve, through detachable tubes of various shapes and conveyed to the cavity, where it is applied by means of an automatic atomizer through a very small aperture.

After experimenting on myself for awhile, I became fully convinced of the efficacy of the device and the value of the idea. I then began to use it on others as the opportunity offered, and was delighted to find that previous observations of its effects were confirmed. Exhibited as indicated, I have employed nitrous oxide as a local anæsthetic many times in my practice, with the most gratifying results in every case except two, in one of which the patient was hysterical, and the other in such a highly-wrought state of nervous excitability that I was unable to apply the blast properly.—DR. G. L. CURTIS.

CEMENT FILLINGS.—Lately I have been making some experiments in incorporating a very fine grained asbestos in oxyphosphate fillings in the proportion of about one-third of asbestos to two-thirds of phosphate. Oxychloride I have abandoned as being too much of an escharotic to place near tooth-pulps. Even the oxyphosphate, which does not irritate, permits thermal changes and shocks, lasting, perhaps, a week or a month in some cases. I am incorporating asbestos, which we will assume to be a better non-conductor than the oxyphosphate itself. I have done that in some desperate cases in which I expected serious trouble from the solid gold operations near the pulp, and yet in not a single instance have the patients complained of any thermal changes. I have had success with it as a nerve-capper. A non-conducting filling is what we want. It occurred to me that perhaps a diametrically opposite method from that which was pursued thirty years ago might be successful. We then used fine ground quartz, or silex in oxychloride fillings, thinking it would prevent wear; but we found when a piece of silex would get loose it would plow

its way across the filling and assist in breaking it down instead of preventing it from wearing away. Asbestos is exactly the opposite of sillex; instead of fragments of glass, it is silken thread; it will allow the masticating motion of the teeth without abrasion and prevent wearing.—E. PARMLY BROWN.

Societies.

“Wherewith one may edify another.”

TO THE MEMBERS OF THE DENTAL PROFESSION.

YOUR attention is called to the next meeting of the Ohio State Dental Society to be held at Columbus, October 28, 29, 30, 1890. You are cordially invited to be present and participate in the meetings if possible. Those having new appliances or methods of practice for the good of the profession, are solicited to communicate with the committee, who will take pains in offering an opportunity for the proper presentation of the same.

A. F. EMMINGER,

W. H. TODD,

OTTO ARNOLD,

Ex. Committee.

Address, COLUMBUS, O.

AMERICAN ACADEMY OF DENTAL SCIENCE.

THE twenty-third annual meeting of the American Academy of Dental Science will be held in Boston on Wednesday, November 12, 1890. The annual address will be delivered by W. W. H. Thackston, M.D., D.D.S., of Farmville, Virginia.

EDWARD N. HARRIS, D.D.S., *Cor. Sec'y.*

2 PARK SQUARE, BOSTON, MASS.

Books and Pamphlets.

ESSENTIALS OF ANATOMY AND MANUAL OF PRACTICAL DISSECTION TOGETHER WITH THE ANATOMY OF THE VISCERA, by CHARLES NANCREDE, M.D., Prof. of Surgery and Clinical Surgery in the University of Michigan, Ann Arbor, corresponding member of the Royal

Academy, Rome, etc., etc. Third edition revised and enlarged. Based upon the last edition of Gray's Anatomy. Philadelphia: W. B. Saunders, Publisher. 1890. Price, cloth \$2.00 net.

The author has endeavored to embody, in this volume only those facts which have appeared to him to be really the essentials of anatomy. While this book cannot replace the larger anatomical works, sufficient descriptive matter has been introduced to enable the student to refresh his memory of the more numerous facts learned in the lecture and dissecting room, or from his *Gray* or other text-books, differing in this respect from most of the works of its class, which are little more than a list of names, without any distinctive facts connected with them to aid the student in the difficult task of acquiring a knowledge of a branch of medical study almost solely dependent upon unassisted powers of memory. The work is concisely written and all superfluous words eliminated. The colored plates, covering thirty full pages, and wood-cuts to the number of 180 greatly enhance its value and are alone well worth the price of the volume. It is a work every student and practitioner of medicine and dentistry should own.

LITERARY NOTES.—The seventh edition of "Da Costa's Medical Diagnosis" is now announced by J. B. Lippincott Company as ready. The work has undergone a thorough revision at the hands of its eminent author, and many chapters have been entirely re-written, so as to inculcate all that has been added to our knowledge of disease up to the present time. A number of wood-cuts are included, especially of such micro-organisms as have proved to be of practical significance in diagnosis. All the illustrations are original, and many are from sketches, or based on sketches, taken directly from cases of interest. There is no work more helpful to a young practitioner than this one, which has already been pronounced by eminent critics "the best book on diagnosis extant."

Another valuable book just issued by J. B. Lippincott Company, is Prof. Garretson's *Treatise on the Diseases and Surgery of the Mouth, Jaws, Face, Teeth, and associate parts*. Upon the appearance of the first edition many years ago, it assumed the leading place as a text-book, to which its merit and the distinguished position of its author entitled it. Much important matter has been added to the new edition, together with numerous illustrations, which greatly increase its value to dentists, surgeons, and physicians.

BOOKS RECEIVED.

THE STUDENT'S MANUAL AND HAND-BOOK FOR THE DENTAL LABORATORY, by Dr. L. P. Haskell. Philadelphia: Wilmington Dental Mfg. Co., Publishers.

A TEXT-BOOK ON COMPARATIVE PHYSIOLOGY FOR STUDENTS AND PRACTITIONERS OF COMPARATIVE (VETERINARY) MEDICINE, by Wesley Mills, M.A., M.D., D.V.S. New York: D. Appleton & Co., Publishers.

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Contributions.

“A word fitly spoken is like apples of gold.”—SOLOMON.

DRY COPPER AMALGAM.

BY DR. HENRY BARNES, CLEVELAND, O.

Much has been written of copper amalgam as a filling material, but it is not giving the satisfaction claimed for it on its first introduction to this country, we believe this is owing to an excess of mercury. Some writers claim for it ease of manipulation, and we can readily understand how they use it, full to overflowing with mercury. No wonder 'tis easy—others “add mercury if too dry.”

We have to a certain extent followed the advice of those who were supposed to know, with very discouraging results. From experiments covering a period of about one year, we are clearly of the opinion that mercury should never be added to the amalgam to insure its plasticity. To make copper amalgam: Precipitate the copper using either zinc or iron and proceed in the usual way, heating, triturating and expressing the mercury (always use the vise) until the amalgam presents a copper color when it will be found difficult to make it ball or mix, then bottle for use. After a few hours the pellets will be found of a dirty copper color.

To mix for filling: Heat a quantity in an iron spoon until the globules of mercury appear all over the surface and crush to powder while yet in the spoon, again heating until the mass presents a dark appearance when it is placed in the mortar and triturated for a few moments, now add a little water which will facilitate amalgamation; again place in the spoon and heat until the water is entirely evaporated when it is transferred to the chamois skin and twisted into a ball, now place in the vise and while tightening twist the chamois at the same time, which will express the mercury and leave an amalgam rather hard and not easy to manipulate. Now if broken up into small pieces and placed in the cavity piece by piece it can be worked with a bur-nisher of proper size and shape (for the cavity) either by hand or better with the engine when a hard polished surface having a copper color will be the result. This will become very black but will not cup nor discolor the tooth. Any of the copper amalgams now sold will produce the same results if only the mercury with which they are all overloaded is thoroughly expressed. Don't be afraid of burning the amalgam as overheating seems to be good for it. The object of this paper is not to make the filling of teeth with amalgam easy, but to overcome some of its defects and thus get the best results.

TREATMENT OF THE THIRD STAGE OF ALVEOLAR ABSCESS.*

BY E. C. MOORE, D.D.S., DETROIT, MICH.

I AM of the opinion that in almost every case of alveolar abscess the happiest results may be attained without the application of medicines unless we may construe water coming under that head. Although the writer generally uses some antiseptic or disinfectant, or in the language of Dr. George Watt, "a stink disguiser," or germ destroyer, this not so much as an element in the curative process, but for the comfort and passification of his olfactories, the treatment consists chiefly in removing the cause, or source of this outflowing fountain, the putrescing nerve, or pulp just exactly as one would remove from the alley a dead and

* Read before the Michigan State Dental Society, 1890.

decomposing cat or dog if in too close proximity to his residence. Its of little consequence how this is accomplished, so it is effectually accomplished, the source removed, eradicated, just a little fresh dirt thrown over the defunct animal may change the character of the air wafted through the family residence for a time, but as the elements of combustion, sun and air or heat and air, again reach the dead flesh the product of decomposition is made manifest. Just so in the treatment of the nerve canal, the dead cat must not only be thoroughly removed, but a barrier placed against its possible return, or so to speak, close up the alley. This dead matter, animal or vegetable, must be removed, and in its stead a filling of almost any indestructable substance, which must thoroughly seal the apex of the root at least. Now in the removal of this matter, and in the process of preparation for filling, there is one infallible remedy or preventive, which I am going to disclose to you as a great secret (and if it should be the only recommendation in this paper heeded the writer is content) and which, if you will use, you can not fail to prevent trouble. We often hear practitioners speak of sure cures, or specifics for certain troubles, but we are apt to take it with at least a grain of allowance, but I tell you I have a sure cure or preventive, and I can demonstrate to you to a certainty its infallibility, and that is a preventive of going through the side of the root in the process of cleansing or preparing for filling. Never, never, never use a drill in this connection, its useless, its unnecessary, its bad, its senseless, its unpardonable, its criminal, and should be a States' prison offense, so inexcusable is it. If this precaution or preventive is acted upon, its simply impossible to puncture the periosteum, unless there is an opening already there, but for which you can in no way be responsible, and here is the strong point in favor of this advice. If you don't use the drill, you can't be held or made responsible for any openings through the root. You are satisfied in your own conscience that you have not at any point gone through the side or bottom. With the excellent quality of broaches and canal cleaners, particularly the Donaldson, there is no excuse, and no guilty man should escape.

As I have already intimated in this short paper, its of little consequence what the canal is filled with so long as the substance is indestructable in the mouth, but both the cleansing and the filling must be thorough, only be sure of this. And to do all

this it is unnecessary to wait a minute for farther treatment than has already been described in this paper. The permanent filling, so far as the canal is concerned, can be put in at once and there is the end of it, leaving the rest to the tender mercies of dame nature who only mixes a little time with her remedies.

For a filling material the writer prefers tin or oxychloride of zinc, the former being used in the straight, or single canaled teeth and is prepared from a light number of foil by shaving off with a sharp pair of foil shears into hair-like strips. One end of one of these hair-like strips is placed at the orifice of the canal to be filled and with a fine smooth broach reduced to this fineness and smoothness by a fine oil stone and with the same squared across the end, the foil is caught by this squared end broach and carried to the extreme end of the canal, and by a slight backward and forward motion the rest of the strip is tucked in and made quite compact. This operation is repeated to the satisfaction of the operator, and in receding from the apex of the canal, and as it grows larger, larger instruments are used. It is not the intention of the writer to enter too much into minutia. All this is worked out by the operator himself.

Oxychloride of zinc is used in a class or kind of root filling where the canal is very small or difficult of access, or the canal can only be entered by using a curved instrument. A very fine broach, prepared as above described, only smaller, is used to work this cream-like mixture of oxychloride of zinc into the finest canals. A small amount of the mixture is placed at the orifice and the fine broach punctures it and passes on to the extreme end of the canal, and then a slight motion of the instrument will cause the thin mixture to disappear into the canal, removing the instrument occasionally to expel the air from the canal to allow the oxychloride to take its place. This is preferable, in the writer's estimation, to a solution of gutta-percha and chloroform; its more liquid-like and does not stiffen like the gutta-percha owing to the rapid evaporation of the chloroform.

After this short description, passing around some of these small instruments will give you a better idea how this kind of root filling is done, and how the little instruments are prepared.

RUBBER.

BY PROF. C. L. GODDARD, A.M., D.D.S. SAN FRANCISCO, CAL.

I HAVE found considerable difficulty heretofore in teaching to students the difference between caoutchouc or virgin rubber, and the two forms of vulcanized rubber.

Many in their answers to quizzes confound the qualities of virgin rubber and soft vulcanized rubber. While many suppose that the only difference between hard and soft rubber, is that the one is vulcanized and the other not. Some suppose that the word vulcanize means to harden rubber, but I want to emphasize the statement that that is not its meaning.

Pure caoutchouc lacks many qualities that are desirable, for instance, it lacks durability and loses its elasticity. The discovery was made by Chas. Goodyear in 1843. That if sulphur was added to caoutchouc, and the mixture subjected to heat for a certain length of time, the result was a great improvement in the desirable qualities. The product was called *vulcanized rubber*, and the process vulcanization. It was further discovered either by Nelson Goodyear or by Austin G. Day, that by increasing the quantity of sulphur, and raising the temperature of vulcanization quite a new and different product was obtained and to it was given the name of *hard rubber* or *vulcanite*.

For various reasons I have compiled a table, showing in comparison the qualities of the three forms of rubber of which I have spoken. By *caoutchouc* I mean simply the hardened juices of the rubber tree. By *soft vulcanized rubber* I mean a mixture of 100 parts of caoutchouc and 25 parts or less of sulphur, vulcanized at a temperature below 300° F. A familiar example of this is rubber-dam, rubber bands, rubber shoes, rubber balls, etc.

In the manufacture of various articles the proportion of sulphur, and the temperature, and time of vulcanizing are varied somewhat, and in some instances other materials are added to color or to adulterate the rubber, thus producing various grades. The amount of sulphur that I have mentioned, 25 parts, and the temperature between 250° and 300° F. will be a good average. By *vulcanite* or *hard rubber* I mean a mixture of 100 parts of

caoutchouc with 50 parts of sulphur, vulcanized about 300° F. or 320° F. Examples of vulcanite on artificial dentures, hard rubber combs, pen holders, pencil cases, etc. That the hardness of vulcanite depends principally on the quantity of sulphur mixed with it is proved by vulcanizing a piece of our plate rubber in contact with something that has greater attraction for sulphur. For instance, if a piece be vulcanized in contact with silver, some of the sulphur will unite with the silver and the rubber in contact with it will remain soft, owing to the loss of sulphur. Both *soft vulcanized* rubber and *vulcanite* are colored by adding various pigments, formulas for which will be given to you later. The coloring matter has, however, no effect in the vulcanizing process, but only adulterates and weakens the product. The comparative qualities are best shown as follows:

Caoutchouc, Pure.	soft vulcanized rubber C, 100 + S, 25 or less.	and vulcanite. C, 100 + S, 50.
1. Pliable.	Pliable.	Hard.
2. Loses elasticity.	Retains elasticity.	Elastic.
3. Softened by heat.	Unalterable by heat.	Softened by heat.
4. Rigid in cold.	Not affected by cold.	Not affected by cold.
5. Soluble.	Insoluble.	Insoluble.
6. Perishable.	Durable.	Durable.
7. Adhesive.	Inadhesive.	Inadhesive.
8. Unpleasant odor.	Less odor.	Odorless.
9. Non-conductor.	Non-conductor.	Non-conductor.
10. Permeable.	Impermeable.	Impermeable.
11. Not polishable.	Not polishable.	Polishable.

You will see that there are few qualities in which they exactly agree, several which they possess in different degree, and some in which they are very much unlike. Let us look at some of these qualities more in detail.

1. The first two are pliable, that is, in sheets they can be bent readily or applied to any irregular surface. They are soft while vulcanite is hard like ivory. A hard product can be produced from the mixture for soft rubber by adding magnesia, lime or some similar substance. This was the first hard rubber, but was distinctly an inflexible substance.

2, 3 and 4. Caoutchouc, though it is highly elastic, loses its elasticity by being stretched and retained in its new position a few hours or days, or by being subjected to cold, when it becomes hard and inflexible. The elasticity in either case can be restored

by a slight degree of heat. Soft vulcanized rubber on the contrary retains its elasticity in all temperatures that do not actually destroy its substance. This is one of the qualities that render it very valuable and useful.

Vulcanite possesses an elasticity like ivory, that is, a vulcanite ball will rebound like an ivory ball. A thin piece bent returns to its former shape more readily than ivory. It is more elastic than ivory, more like steel, though not of course possessing the strength of steel.

The word "elasticity" possesses two meanings. For instance, if we stretch a thin piece of soft vulcanized rubber as much as possible, without breaking, it will return to place. If we bend a thin straight piece of vulcanite or steel it will return to place. It is unfortunate that we have not in English two words to express the two ideas.

On the other hand the term "elastic" expresses that quality of both soft and hard rubber by which either if compressed, returns to its former shape. Thus, while we say that both soft vulcanized rubber and vulcanite are elastic, we refer to a different, though in some respects similar property in each.

5. Caoutchouc is soluble in ether, chloroform, sulphide of carbon, naphtha, benzol, oil of turpentine, oil of lavender, oil of caoutchouc, linseed oil, ammonia, and in hot sulphuric or nitric acid. Both forms of vulcanized rubber are practically insoluble. Before vulcanization they can be dissolved but not after. This fact enables us to mix various ingredients with them before vulcanization.

6. Caoutchouc is perishable in the fact that it soon loses its elasticity, slight changes in temperature towards either extreme rendering it useless. Many fortunes were lost in attempting to make marketable shoes and clothing of it before the process of vulcanization was discovered.

Soft vulcanized rubber is durable compared with caoutchouc. Though you all know that sooner or later it loses its properties and is easily torn or ruptured, although it will stand the heat even of boiling water for some time. It is spoiled by remaining a long time in a much lower temperature. Soft rubber is sometimes used in the mouth either for artificial vela or to make a soft and pliable edge to a plate. In either of these purposes, however, is it very durable? The heat and moisture of the

mouth decompose it. The lack of durability of the soft edge of a vulcanite plate may be accounted for by the fact that both kinds are vulcanized alike, while each kind of rubber should be vulcanized at a different temperature and for a different length of time. The best results for soft rubber cannot be obtained when it is vulcanized at the same temperature as hard rubber. Vulcanite on the other hand is as indestructible as ivory.

7. Caoutchouc is adhesive, that is, it will adhere to other substances, but is especially cohesive, that is, pieces of it will stick together so that they cannot be separated at the point of union any more readily than the pieces can be torn at other parts. Coats, cloaks, and shoes made of it stick together and were thus spoiled. Both the other forms are inadhesive and cannot be made to stick together except by means of cement of some kind. They are cohesive only before vulcanization.

8. All kinds of rubber are non-conductors of heat and electricity, but frictional electricity can be produced or developed by them.

9. Neither caoutchouc nor soft vulcanized rubber can be polished. The latter can be vulcanized with a glossy surface, but no alteration can be made after vulcanization except by cutting. The cut surface if rough cannot be smoothed, and any attempt to sand-paper or polish only makes it rougher. Vulcanite on the other hand, can be sawed, filed, sand-papered and polished. It can also be vulcanized with a glossy surface, in a smooth metallic mould. The fact that it can be cut, smoothed, polished, etc. is of the greatest importance in its use for artificial dentures.

Soft vulcanized rubber is sometimes used for the edges of plates. But the fact that any change in form must be made by a single cut of the knife or shears and that this cut edge cannot be rounded, smoothed and polished greatly restricts its use.

THE UNIVERSITY OF MICHIGAN AND ITS DENTAL DEPARTMENT.

BY W. H. WHITSLAR, D.D.S., M.D., YOUNGSTOWN, O.

THERE is no better place for a *student* than Ann Arbor, Michigan. The attraction there is the University of Michigan. This

institution was prominently before the people of Michigan while still under a Territorial government, but no organization in permanent form was effected until after the adoption of the State Constitution.

In 1845 eleven young men received the degree of Bachelor of Arts, and this was the first regular class to graduate. The contrast between the number of the class at that date and the number now is great. The annual catalogue published for this year announces a total number of 2153 students.

It would be impossible in this article to give a complete history of the advances made by this University, and my intention in the beginning was simply to give some facts concerning the dental department.

The writer a short time ago had the pleasure of once again visiting the college from which he graduated a few years since, and while there a few notes were made with a view of presenting the readers of the JOURNAL some idea of the work that is being accomplished by the students and faculty. In doing this it is not the intention to "boom" the college, for, a State institution like this does not depend upon the number of students and their fees for support, and thus whilst the number of matriculants may be smaller, greater advantage results by each student receiving more attention than those where there is a large number to be taught. Prof. Taft said, "We do not want more students, we haven't room for them"; and this is true, for every available space for chairs is utilized. This is surely an indication that a three years' course of instruction is meeting with favor. This institution was the first to advance to the three year course, and is to-day, I believe, the only one that has a nine months' course or term each year. The indication is that it will be made a four years's course in the near future. These advances in length of term, as well as the many other advances of a substantial nature, have been due to the untiring energy of Prof. Taft whose work for the promulgation of a high grade of education is noteworthy and pre-eminent.

The Dental Department of the University of Michigan was organized in 1875. In the year 1876 nine Doctors of Dental Surgery were graduated. The year following there were ten graduates, and the remaining years we find in 1878, 14 graduates; 1879, 15 graduates; 1880, 34 graduates; 1881, 37 graduates;

1882, 32 graduates; 1883, 26 graduates; 1884, 25 graduates; 1885, 28 graduates; 1886, 30 graduates; 1887, 27 graduates; 1888, 38 graduates; 1889, 34 graduates; 1890, 38 graduates. Total, 397 graduates. Of the number of graduates in all fourteen have died. Twenty-two ladies have graduated, seven of whom have since married, and several were married ladies at the time of entering the department. When the dental college was organized Prof. Taft was selected to guide its affairs and as Dean he has by his persistent energy caused the reputation it has gained to be founded upon the quality of its work. This reputation is known in every civilized portion of the globe. Under the provisions of the "Dentist's Act" of Great Britain, graduates of this college who are not British subjects, are allowed by the General Medical Council to register and to practice dentistry in that country without further examination. Prof. Taft is Professor of the Principles and Practice of Operative Dentistry. The limitations of this article would be extended beyond the coverlid of the JOURNAL if Prof. Taft's work would be known: he is recognized as authority upon all that he may write or speak, and so it is unnecessary to resort further to encomiums or expletives.

Professor Taft is surrounded by an able body of instructors. Skillful Prof. Jno. A. Watling who stands without a peer as an operative instructor holds the chair of Clinical and Mechanical Dentistry.

No college in the country can command the class of work done here. The vast majority of fillings inserted are of gold. No amalgam is used. Tin, gutta-percha, and the oxyphosphates are used.

The class of people operated upon are mostly intelligent people of the town and University students. The average number of gold fillings inserted during the past session by each student was sixty. The amount of gold used by all was fifty-four ounces. Crown and bridge-work of which I saw specimens were well made and carefully inserted by the student.

Dr. Louis P. Hall assists Prof. Watling in the clinic room.

In the Prosthetic department Prof. Wm. H. Dorrance teaches the student that accurate impressions are the first essential towards success in making artificial dentures. He then carries the student through all details to the completion of all forms of artificial dentures made with the available bases from rubber

to continuous-gum inclusive. Prof. Dorrance is a fine mechanician.

Dr. Neville S. Hoff of Cincinnati, O., has removed to Ann Arbor, and is assistant Professor of Practical Dentistry, and his unostentatious manner of inculcating practical ideas meets with the approval of the scholar.

Dr. James N. Martin, Lecturer on Oral Pathology and Surgery gives the student just what is most desired in general practice and does not cram the minds of his hearers with records of monstrosities and fallacious theories.

Professor Corydon Ford, who is second to none as an anatomist, is beloved by all students and scientists with whom he comes in contact. He is a general favorite in the lecture room, never failing to make anatomy simple and entertaining. Through his courtesy comparative anatomy is taught in such a way that his teaching is unrivaled. Prof. Ford is a D.D.S. as well as an M.D., and this probably accounts for his great interest with the dental students.

Other courses of lectures are given by special lecturers during the year. The dental student takes his standing with the medical student in Anatomy, Physiology, Chemistry and Sanitary Science.

As aids to the student any amount of reference works may be had. The general library of the University is located only a few steps from the Dental College. The libraries of the University inclusive of the dental library contain in the aggregate 70,041 volumes, 14,626 unbound pamphlets, and 514 maps and charts. The dental library contains 482 volumes. This includes a complete set of the *British Journal of Dental Science*, which is rare to find in a complete set. Other journals of rarity may also be found in the library. The dental student has free access to all works of reference. A large number of rare books pertaining to dentistry were found in the dental library, such as "Observations on Certain Parts of the Animal Economy," by John Hunter, published in 1786; "Natural History of Human Teeth," published 1728 by the same author. "Le Chirugiere Dentiste ou Traite Des Dents," 1728. An interesting relic was found to consist in the treatise of J. P. De La Tour, 1826, "A Description of the New Patent instrument for Extracting Teeth." It is a fact worthy of consideration that many of the engravings of the older

books, as the one just mentioned, and those found in the works of Bell, Fitch, Hunter, and others, that were the text-books of to-day as perfect with their engravings, they would really be works of art. Ancient works on dentistry are numerous on the shelves of the dental library. Among the authors we noticed the names of Leonard Koecker, Maury, J. Peterson Clark, Jas. Snell, Wm. Robertson, Wm. Imrie, Geo. Waite, L. S. Parmly, Joseph Audibram, Joseph Scott, Roussouau, and others.

Aside from the many opportunities of learning in the dental department, if the student wishes to take a special course in bacteriology or electro-therapeutics, a large laboratory has just been completed and fitted up with all the modern appliances necessary toward making a complete course of study in these branches.

As said before, the probability is that a four year's course of study will be made for the dental student, the fourth year to be consumed in elective studies such as we have just mentioned. Then would come the opportunity of American students taking the lead in oral bacteriological studies, and so on. A short term of bacteriology is of course only superficial, but with the laboratory as it now is equipped, Americans in America should lead the van. This fourth year would also be used in making advanced studies in oral pathology and in consummating the higher grades of chemical work.

Thus an outline sketch of the work and some of its aids to study have been given, but not all has been said that could be written about. As said before, this is not given to "boom" the college but merely to give others some idea of the Dental Department of the University of Michigan.

SOME GENERAL CONSIDERATIONS ON THE TREATMENT OF IRREGULARITIES.

BY J. F. COLYER, L.R.C.P., M.R.C.S., L.D.S., ENG.

IRREGULARITY has been defined as a departure from the normal type.

That irregularities are on the increase is undoubted, and with the increase we have, also, that of the badly nourished teeth. It

is this latter which causes the dental surgeon the utmost perplexity in giving an opinion, and in the following remarks we propose to consider some general points which claim our attention when deciding upon a course of treatment.

Like many other troubles, irregularities can often be avoided by paying careful attention to the mouth during the period of eruption of the second dentition, judicious filling of the temporary teeth, and extraction of them at the proper period being important factors in this prophylactic treatment.

By carefully filling the temporary molars, their premature extraction is often avoided, and the first permanent molars prevented from moving forward, so causing crowding of the erupting teeth.

Judicious extraction is also important, for undue persistence of the temporary teeth in many cases retards eruption, or causes irregularity.

A good rule is that temporary teeth should not be retained after the time has arrived when they should in the ordinary sequence of events be "shed."

When deciding upon a line of treatment, several points will require careful consideration, and it is an excellent plan to take models, for a careful study of these will often elucidate points which would be missed by simply examining the mouth.

One of the first points to consider will be the age of the patient, for an extensive operation undertaken at an early age might tax to a great extent the vital powers, while, if delayed to a later period, health and strength being greater, it might be undertaken with better results.

On the other hand, too long delay may bring about more complications and difficulties.

Roughly speaking, twelve to fourteen is about the best time to regulate, but naturally, no hard nor fast rule can be drawn.

After age, the sex of the patient should not be lost sight of, for certain lines of treatment which are sometimes admissible in a boy, are not always so in a girl,—appearance in the latter being of the greatest importance.

The temperament of the patient must be taken into consideration; some children submitting to the inconvenience of plates, etc., others not.

The patient's position in life, whether well-to-do or other-

wise; the distance to travel for each visit, must both effect our decision.

The facial expression and features must also be considered; for instance, many good-looking people, especially women, have contracted mouths which are in harmony with the rest of their features; in such cases an operation like expansion, could not fail to mar the beauty of their expression.

We should never lose sight of the fact that nature endeavors to set matters right herself, and teeth, which appear irregular at an early age, will often become quite regular if left alone,—the influence of the tongue and lips being great factors in bringing the teeth into a regular line.

Turning to the teeth themselves, their character as to whether weak or strong, should certainly weigh with us; as mechanical treatment in the one may lead to worse results, in the way of caries, than the leaving of the irregularity.

A very careful examination of all the teeth should be made with the probe and mirror, especial notice being taken as to the presence of decay on the approximal surfaces of the molars and bicuspid. The direction of the roots of the teeth must also be ascertained, if this is not done, a tooth, when regulated, will in some cases slope to such an extent, as to look worse than before treatment was commenced. It should always be borne in mind that a tooth does not move bodily, but only swings upon its apex.

After that of the teeth, a careful examination must be made of the relation of the alveolar border to the body of the bone, observing whether the bone is contracted at this part. In contracted arches careful attention to this will often save subsequent disappointment in treating a case.

The question as to whether the deformity is hereditary or acquired, must also be taken into account, the former being much less amenable to treatment.

Lastly, with reference to the teeth, we must examine the "bite," the importance of this proceeding will be subsequently referred to.

The theory of "Travelling of the Teeth" should be kept clearly in view, this practically means the capability of the teeth to shift their positions in the alveoli without mechanical aid, for example, if all the first bicuspid. have been extracted, it will be

found that the teeth behind have a tendency to move forward, those forward having tendency to move backward.

The question of extraction or expansion in crowded mouths may with benefit be alluded to at this point. Without doubt there is no condition of the teeth which requires more careful consideration, in order to discover the correct line of treatment, than this class of cases.

With reference to expansion it is an excellent way of gaining room, but it must generally be confined to those cases which are of the acquired form. As to what happens in expansion is not quite known, and it is an excellent subject for some careful and accurate observations.

Extraction on the other hand, is in its place an excellent method of gaining room, and should be adopted in those cases where the teeth are weak in structure, and where there is the slightest tendency to interstitial caries. Extraction in these cases is conservative treatment.

Expansion is naturally best adopted when we have fairly strong teeth, and can often be combined with extraction to advantage.

When we deem it necessary to extract, we shall often be perplexed as to which teeth should be sacrificed, but when decided upon, they should be removed without delay.

Care should be taken to avoid, if possible, extracting front teeth, especially in girls. The sex of the patient is often of great importance to us in determining between the extraction of individual teeth, when for instance, the question lies between lateral and canine, we should hesitate to extract the lateral in the girl, on account of the appearance, such not being the case in the boy. Carious teeth should naturally be sacrificed first, and always a tooth as near as possible to the seat of irregularity.

A mooted point often arises as to whether the first permanent molar or bicuspid should be extracted. Our judgment must necessarily be to a great extent guided by a consideration of the relative merits of the teeth. In favor of saving the molar, we have the fact that it is physiologically the most important tooth in the whole arch, presenting the largest area of crown surface, situated where mastication is greatest, and admirably adapted to bear the strain thus put upon it, inserted as it is into the malar process, the thickest portion of the maxillary bone.

Against retaining the molar in preference to the bicuspid, we have the fact that it is more liable to caries than any other tooth. In favor of sacrificing the bicuspid, we should remember that it is not so important a tooth, physiologically, as the molar, and further, if extracted, allows the irregularity to be corrected more quickly.

Again, we must not forget that if the first permanent molar remains healthy till the age of twelve, it will be less prone to interstitial decay than even the bicuspid.

Considering these facts we would advise as follows:

1. If the molars have caries on the approximal surfaces, they should be extracted in preference to the bicuspids.

2. If the molars have only carious places on the crown surface such as can be filled with reliable gold plugs, and the approximal surfaces are free from caries, they should be retained and the bicuspids extracted in preference.

In the above we have assumed that the bicuspids are free from caries, if, however, this is not the case, then, naturally, we should be inclined to extract them, but in such cases no definite rule can be laid down. The question as to which bicuspid to remove, the first or second, also requires a passing word. Statistics point to the fact that the second, is, if anything, more liable to caries, and from that point of view should be extracted, considering, however, the fact that the case will in all probability be more quickly corrected by extraction of the first, and also that the liability to caries is nearly equal, we are inclined to advise extraction of the first in preference to the second in the majority of cases. Still there are a few cases in which the second can sometimes be extracted with advantage, viz., those where room is required to the extent of about half a tooth. If the first bicuspid is removed a space will remain between the canine, when it comes into place, the second bicuspid which in a girl will look unsightly; in these cases the second bicuspid can be extracted with advantage, as the space will then occur between the first bicuspid and the molar and, naturally, will not be so easily visible. When employing extraction as a remedy for irregularity keep clearly in mind the condition of the bite, endeavoring is possible to extract in such a manner that nature herself will remedy the case without mechanical aid. When removing a tooth in either jaw it is as well, in most cases, to remove the corresponding

opposing one, this is especially the case with the first permanent molars. If a normal articulation is examined, it will be seen that the surfaces of the bicuspid present practically two planes the one anterior and the other posterior, the anterior of the upper opposing the posterior of the lower. Each act of mastication brings pressure upon these surfaces, and as long as the arch remains intact, the resistance both in front and behind will remain equal, and therefore, the position of the teeth will not alter. Should, however, the resistance in either direction be removed by extraction, then each act of mastication will tend to drive the teeth back in that direction. When the first permanent molars are extracted it is brought about as follows: The posterior plane of second lower bicuspid will act upon the anterior of the second upper, and drive it back, the posterior plane of the first upper bicuspid driving back the second lower bicuspid, and so on. In such cases as these, regulation plates can be to a great extent abandoned—a most important point. There, are naturally, many who are opposed to this view, namely, extracting a corresponding tooth in the opposing jaw, and especially in reference to the molars, holding that it is not legitimate. The best answer to this is to consider a case in which, perhaps, only the molars in the upper have been extracted, on carefully considering the bite, it will be seen that the lower molar is practically no use, since the opposing tooth has gone, still more, it will be seen that the second upper bicuspid is locked, and hence will require mechanical aid to force it back, and when brought back will articulate with a molar crown surface, and will be of but little utility.

Some extract dissimilar teeth in the opposing jaws, but the disadvantage of this will also be readily seen by considering a likely case in which say the first permanent molar has been removed in the upper, and the first bicuspid in the lower. Here, not only shall we have all the disadvantages just pointed out, but the first upper bicuspid will also be robbed of its masticating surface. Extraction after this manner is therefore to be avoided when possible.

In extracting, the centre of the mouth should be taken into consideration. Many argue that if a tooth is removed on one side, endeavor should be made to remove one on the other. When extracting canines, incisors, or bicuspid, it is certainly important, more especially with the former two, but when the

tooth in question is a second bicuspid or molar we do not think its unilateral extraction will have much effect upon the centre.

These then are some of the points which require attention when giving our decision, and the successful dental surgeon will be he who takes a broad view of his case, carefully weighing all the facts.

THE THIRTIETH ANNUAL MEETING OF THE AMERICAN DENTAL ASSOCIATION.

Continued from page 476.

EVENING SESSION, AUGUST 6TH.

Section II was passed without further discussion and Section III, Operative Dentistry, was called.

Dr. A. E. Baldwin, of Chicago, having been elected chairman because of the absence of Dr. Darby, read two papers, one by Dr. Chas. B. Atkinson, of New York, on "Medicated Oxyphosphate Fillings," and another by Dr. J. L. Williams, of Boston, Mass., on "Preservative and Obtundent Treatment of Teeth."

Dr. Atkinson's paper advocated mixing the various medicinal agents, such as: creosote and oil of cloves, eugenol, deliquesced carbolic acid, cinnamon oil, clove oil, pure creosote, creosote oil of cloves and iodoform, creolin, campho-phenique, potassium chlorate, salicylic acid, camphor, stick sulphur pulverized, iodoform, oil of wintergreen with oxyphosphate fillings in treating teeth. The medicaments when powdered are mixed with the oxide of zinc and when liquid with the phosphoric acid. The writer claims to have had excellent results from the use of a pulp capping composed of creosote, oil of cloves and oxide of zinc, covering this with a thin oxyphosphate filling to which some antiseptic remedy has been added. The writer advises the same mixing of antiseptic remedies with oxyphosphate used in setting inlays, crowns and retaining or regulating appliances.

Dr. Williams' paper advocated treating sensitive dentine and exposed pulps with soothing antiseptic non-irritating remedies sealed into the cavities by plastic fillings, removing and replacing as often as necessary until nature has had a chance to produce a healthy condition, unhindered by irritating medicines or zymotic influences. Thirty-four years of practice on this prin-

ciple enables the writer to commend this practice with assurance. Advises against the use of all caustic or irritating applications. A solution of calcium chloride in deep seated caries is an excellent anti-ferment. Dr. Williams claims to have been the first to propose a treatment that would favor the deposition of secondary dentine. Also the mixing of oxide of zinc with gutta-percha.

The report of the section was read by N. S. Hoff, Secretary. The report was a general review of the progress made by the operative department of dentistry as expressed in the contributions in the way of books, papers and discussions, instruments, appliances, materials, etc. The report endeavored to enumerate all the suggestions and inventions of the year, calling special attention to such as are likely to prove specially helpful. The report recommended, and the officers of the section have planned to do so next year, a division of the subject of operative dentistry into its principle departments and the appointment of one member who shall collect everything that transpires during the year in the department specially allotted to him and report it at the next meeting. Appointments have already been made on the following subjects: Treatment of children's teeth, materials used in filling teeth, operating instruments and appliances, treatment of exposed pulps, literature, and conduct of an office. Other subjects will be arranged for soon and it is hoped that the report next year will be the most complete one ever made on this subject.

DR. C. N. PEIRCE wished to call attention to the action of peroxide of hydrogen on tooth substance. He exhibited a bottle containing one-half ounce of peroxide of hydrogen into which he had placed a tooth with a large amount of exostosed substance on the end of the root. The liquid was changed every twenty-four hours for several days. Each day a large amount of white flocculi or white deposit would appear at the bottom of the vial, until the exostosed portion had all disappeared, when the action upon the cementum was less rapid, the same fact was noticed also when the dentine was reached. There was no apparent roughness of the tooth that would indicate the absorption of the organic or inorganic portions, but both seem to be equally abraded. Its use then should be with caution.

DR. T. W. BROPHY.—It is well known that sulphuric or hydrochloric acids are used to keep the peroxide of hydrogen

stable. Dr. Peirce's experiment would be more satisfactory if he had ascertained before using whether the peroxide was of an acid or neutral reaction. The experiment would have been more conclusive if the peroxide had been known to be neutral in its reaction. It is well to discriminate in the use of these strong drugs.

DR. M. L. RHEIN, of New York.—Have obtained results similar to this in dissolving salivary calculus with the peroxide.

DR. A. W. HARLAN, Chicago.—The action of this drug on the tooth has received too little attention on the part of the profession. Peroxide of hydrogen of 12 per cent. solution should be absolutely neutral, but I have only been able to secure two varieties that were so, namely, Tromesdorfs and Schuchard's.

DR. D. R. STUBBLEFIELD, Nashville.—I do not think sulphuric acid is ever used in the preparation of peroxide of hydrogen. Hydrochloric acid is used in its manufacture and this acid would produce the result Dr. Peirce has obtained.

DR. WM. CONRAD, St. Louis.—Dr. Fisher read a paper at the last meeting of the Missouri Dental Society, in which he stated that a prominent manufacturing chemist of St. Louis told him that sulphuric acid was added to peroxide of hydrogen to secure its stability. [No acid is used in its manufacture according to Mitchell's Chemistry.—Reporter.]

DR. W. H. ATKINSON.—When I first used peroxide of hydrogen for cleaning the debris out of root canals, I thought I had found my washerwoman, but I soon found that the bubbling resulted in the presence of other things, blood and pus as well as tooth substance. Glycozone is preferable as it is a more reliable preparation than peroxide of hydrogen.

The peroxide containing the tooth was examined with test papers by Dr. Harlan and found to have a decidedly acid reaction. He was of the opinion that the acid was hydrochloric.

DR. LOUIS OTTOFY, Chicago.—I have employed medicaments in composition with oxyphosphate for filling over sensitive dentine and pulp capping with good results.

DR. STORY, Texas.—I do not believe much in capping exposed pulps with any sort of a remedy, don't use many remedies any way. Oxychloride of zinc is good enough germicide and disinfectant for me.

I capped a pulp two years ago and it was all right for

a while, but one day the patient came in with a swollen face. I removed the filling, cleaned out the pulp canals and filled with oxychloride of zinc and had no trouble since.

In another case I filled a tooth with amalgam over a nearly exposed pulp, and after a few years the tooth gave trouble and on removing the filling I found the pulp had receded and died. I don't need a great lot of fine instruments for introducing my oxychloride into the root canals. I find a piece of whalebone worked down to the proper size to admirably answer my purpose.

DR. E. PARMLY BROWN, New York.—Don't let two dead pulps frighten you off from saving two hundred alive. A tooth with a live pulp in it is worth a dozen dead ones. The idea of incorporating medicaments with oxphosphate dressing is a good one. I use South Sea Island asbestos incorporated with oxyphosphate as a dressing and capping for exposed pulps, it prevents thermal irritation and is non-irritant.

DR. P. T. SMITH.—Pulps die not so much from irritating fillings as from starvation.

DR. STORY.—I generally find that where pulps have died after filling, that the teeth were very sensitive when filled and something was used to relieve the sensitiveness.

DR. J. N. CROUSE.—The record of my cases of capping exposed pulps is different from Dr. Story's. I occasionally have a failure but it is the exception and not the rule. I believe the operation of capping exposed pulps is a successful one when properly done. The difference in results in my operations is that of skillful manipulation and bungling.

DR. STORY.—Dr. Crouse lives in Chicago and I live in Texas; he can save pulps in Chicago but I can't do it in Texas; I don't practice dentistry to make trouble for my patients or myself either. I have from two to three funerals in my office every week.

DR. CRAWFORD.—I think the trouble is that we don't discriminate in the selection of cases. You can't save a pulp or successfully cap it when it is all gone except a small portion in the root canals, but you can successfully cap many nearly exposed or accidentally exposed pulps, or those largely exposed in strong and robust patients.

DR. BALDWIN.—In this practice we must take into consideration the climacterical condition of the patient. There are certain

periods in the lives of patients when all surgical and remedial physical conditions of the patient and the environments, climate, etc., are important matters of consideration, but all the conditions should be recognized and provided against if we expect to be successful. The condition of the patient is everything. We may think we have succeeded often in saving exposed nerves, when if we open the tooth we will find dead pulps. It is not my practice to attempt to save a pulp that has been subjected to pulpitis. It makes considerable difference, too, whether a pulp has been actually exposed.

DR. RHEIN.—I think we ought to endeavor to save the pulps of every young and growing tooth.

DR. CONRAD.—I deem it very proper to attempt to save the pulps in young and growing teeth, but it is in my opinion, sure death to apply medicinal agents mixed with oxyphosphate to exposed pulps.

DR. A. W. HARLAN.—When I was in Europe last year I had an opportunity to inspect some specimens of white rubber inlays, such as were referred to in the section report. The fillings looked very much like the teeth and they are easily made and inserted and take a very good polish. I see no reason why they should not be used to good advantage in many places.

DR. A. J. SWASEY, Chicago.—I have seen some of this white rubber inlay work, but the only rubber inlay that I have seen that fitted the cavity snugly was made of black rubber. I use a gold inlay which is made by shaping the cavity as for the ordinary inlay, beveling the border slightly. Into this is burnished approximately a sheet of No. 120 gold foil, then a piece of erasing rubber is cut to about the size and shape of the cavity and placed in over the gold and the patient asked to close the teeth together thus forcing the rubber down into the cavity and causing the gold to conform to the exact shape of the cavity; a burnisher is passed around the edge and the gold brought up close to the margin of the cavity; the gold is then removed and trimmed to nearly the right size, annealed and replaced in the cavity; the rubber is again put in place and an additional piece of rubber somewhat larger than the cavity put over it, and the patient again requested to close the teeth upon it; this will cause the gold matrix to adapt itself perfectly to the cavity; remove from the cavity and invest in one-third hard coal ashes and two-

thirds plaster; melt into this matrix twenty karat gold using a large flame with a blow-pipe. The sides of the inlay are grooved with a file and the surface roughly finished, and the inlay is set with a thin cement, using the mallet to gradually tap it to place; when set, finish as if an ordinary gold filling.

MORNING SESSION, THURSDAY, AUG. 7TH.

Section V, *Materia Medica* and Therapeutics.—Dr. Harlan, the chairman of this section, in lieu of a formal report, read a paper entitled "*Acidum Carbolicum*."

The paper gave an historical sketch of the discovery of carbolic acid and its therapeutical application. A new kind of carbolic acid has recently been put on the market, it is called synthetic carbolic acid and is manufactured in Germany. It is clear, crystalline, with a slight odor which does not resemble the coal tar product. Is soluble in twelve parts of water making a clear solution. A five per cent. solution has no perceptible odor. The germicidal action is about the same as pure ordinary carbolic acid, but neither of these possess as great a germicidal activity as a mixture of crude carbolic acid and sulphuric acid. Carbolic acid should not be used in arsenical preparation for destroying pulps, as the pulps and tooth will degenerate more rapidly, use instead oil of cinnamon, cloves or cassia. Carbolic acid should not be used in the treatment of roots for the reason that it coagulates the organic structure and does not penetrate the dentine, thus leaving zymotic influences to start a fermentative and disintegrating process after the tooth has been filled, changing its color and perhaps precipitating its destruction. Its action on a blind abscess is to convert it into an acute one. It should never be used in the treatment of diseased gums uncombined with other drugs that will neutralize its causticity; it may be combined with camphor, tannin, glycerine or some of the oils. It should never be applied to a pulp that is to be capped, as its caustic action is fatal. Astringents and soothing remedies should be applied to exposed pulps. It should never be used on cotton to be left permanently in roots as it readily decomposes and possesses no embalming quality. Copal, damar, Canada balsam and agents of this class may be used for this purpose. It should never be used for the treatment of abscess through the roots of teeth; permanganate of potash, silico fluoride of sodium solution,

oil of cloves, cassia, cinnamon and agents of this class are preferable as they are diffusible and will not clog the dentinal tubuli and are better antiseptics.

The only desirable uses of carbolic acid are in the form of a spray, as a local antiseptic, component of mouth washes, or in combination with other remedies for the treatment of diseased gums and medication around the roots of teeth.

There being no discussion of this subject the next section was called.

Section VI, Physiology and Etiology.—Dr. H. A. Smith, Cincinnati, read the report of the section. The subject of implantation is being followed up closely in keeping statistics of cases. It seems that some of those who have been interested in this subject have lost confidence in its permanent results, as many of what were formerly reported successful operations have since proved failures.

The report stated that the matter of tabulating the prehistoric crania of the country, which was referred to this section last year to be done, was to be taken up at once. Difficulty had been experienced in adopting a satisfactory system of classification. Dr. J. J. R. Patrick, of Illinois, has consented to undertake the work and his system of classification would be adopted. The report also referred with commendation to the work of Dr. E. G. Betty, of Cincinnati, who had critically examined all the crania of the Army Medical Museum at Washington, tabulated the results and published them in the *Dental Review*, April, 1890.

Dr. Patrick read his plan for tabulating the statistics and explained his ideas as to what we should seek to establish in this investigation. Blank forms of the plan will be printed and may be had of Dr. Patrick. It is desirable that every person having access to a collection of such crania, however small it may be, should apply for these forms and make the examination and return the result to Dr. Patrick for tabulation and classification. The dental profession owes a great deal to a few men who have spent their time, money and lives in investigations for the benefit of dental science. Here is a chance for a great many to unite in a grand work that will be productive of great good to our science.

Dr. W. S. How, Philadelphia, read a paper on "Hillischer's system of notation and indices." This paper was interesting, but an abstract of it without the tables would not be sufficiently

intelligible or valuable to warrant us in attempting it in this report. It will be published with the transactions.

Dr. L. Ottofy stated that the average per cent. of successful operations in implanting teeth had been because of additional failures, reduced from seventy-five to sixty per cent. Reported a case where an implanted tooth had been cut off at the neck by absorption and the root remained intact. Dr. M. H. Fletcher, of Cincinnati, had experimented by implanting teeth in a goat's leg and jaw and finds upon killing the animal that there was absorption, more or less, in every case.

Dr. Goddard showed a specimen of tooth prepared for implantation operations. It was a natural root to which a Logan crown was attached. The joint was made by a gold filling entirely around the root.

Dr. H. A. Smith recommended the adoption of an international system of notation. The French and Germans already have one, but what we need is one that will be adopted and used everywhere. This is a subject that could be very happily adjusted at the great international meeting in 1893.

Dr. Ottofy suggested that it would be well for the Association to adopt a resolution inviting visitors to the meeting of 1893 to come prepared to discuss this question and submit a system of international notation for consideration.

Section VII, Anatomy, Pathology and Surgery was next called and Dr. M. L. Rhein read the report, which called attention to the fact that surgical operations that were peculiarly within the province of the dentist to perform, were not attempted by him at all, but if brought to his notice, they were at once referred to the general surgeon for treatment.

The reason for this was largely due to the fact that dentists were ignorant of the anatomy of the facial region and of the pathological conditions involved and could not carry out a systematic treatment of cases. Our education is at fault here. We need more and better text books on these subjects and this branch of instruction needs revising.

Dr. Rhein read a paper written by Dr. Arthur C. Hugenschmidt, of Paris, France, entitled "Occasional Origin of Alveolar Abscess from Teeth with Living Pulp."

The paper related three cases in proof of the assertion that abscess can occur and the pulp remain alive. Two of the cases

were molar teeth and one a central incisor. When the abscesses appeared the teeth were drilled and manifested all the sensations of teeth with living pulps. The drilling was discontinued and treatment applied to the abscesses externally without successful results. The pulps were then exposed, destroyed and the abscesses yielded to ordinary treatment. The paper attributes the cause of the abscess in these cases to the irritation of a filling which resulted in a hypertrophied condition of the pulp, which produced absorption of the dentine and cementum at the end of the root and consequently enlargement of the foramina. The inflammatory condition of the pulp is conveyed by continuity of tissue outside the tooth canal to where the hard tissue is less resistant and the inflammation becomes localized into an alveolar abscess.

The doctor concludes that a chronic alveolar abscess does not always arise from a devitalized tooth, but a living tooth may be the only source and origin of true alveolar abscess. And when such an abscess does occur from a living tooth there is necessarily enlargement of the apical foramina.

Dr. M. L. Rhein read another paper written by himself on "The Amputation of Roots as a Radical cure in Chronic Alveolar Abscess, Complicated with Pyorrhœa Alveolaris."

This important operation receives little or no notice from the text-books or the profession generally. It presents no anatomical or surgical difficulties. The only instruments needed are a sharp spear-head drill to drill through the process and root at a right angle to the canal, and a new sharp fissure bur that will cut laterally to sever the root. Generally no anæsthetic will be required. Cocaine may be successfully used, and if the operation is likely to prove tedious and painful, it would be well to have a physician administer chloroform or ether. If there is an area of dead bone surrounding the end of the root it should be burred out with a large bur.

If antiseptic precautions are observed and the root cut off smooth and clean, there will be no question as to the result of this operation. The doctor instanced three extremely bad cases for which he had successfully operated. The roots were drilled, cut off and removed, the dead bone burred away, the cavity washed out with a solution of bichloride of mercury in peroxide of hydrogen and the wound was allowed to heal under iodoform

dressings. This operation is especially applicable to the roots of upper molar teeth. It is applicable to all teeth.

EVENING SESSION.

Dr. Taft, of the committee of necrology, presented resolutions on the death of Dr. Homer Judd, of St. Louis, which were unanimously adopted.

On motion of Dr. Truman, the place for holding the next meeting was left to the committee of arrangements.

The president declared the next order of business to be the election of officers and stated that an informal vote would be taken. This resulting in the election of Dr. A. W. Harlan by 60 votes out of a total of 71. By a unanimous vote this ballot was made a formal one and Dr. Harlan was declared duly elected president for the ensuing year.

The following were duly elected to the respective offices:

J. D. Patterson, 1st vice-president; H. B. Noble, 2nd vice-president; Geo. H. Cushing, recording secretary; Fred. A. Levy, corresponding secretary; A. H. Fuller, treasurer; C. N. Peirce, H. A. Smith and L. D. Shepard, members of the executive committee.

After the election, the president asked Drs. Gardiner and Walker to conduct the newly elected president to the platform. President Foster, in a graceful speech, thanked the members of the Association for the courtesy shown him during the meeting and asked that the same considerate treatment might be extended to the newly elected president, Dr. A. W. Harlan, whom he was pleased to present to the Association as its presiding officer for the ensuing year.

Dr. Harlan, in a brief speech, thanked the members of the Association for the great honor they had conferred upon him. When I entered this Association nineteen years ago, I had no idea I should ever become its presiding officer. I ask your indulgence and hope we may all work together to make the meeting of this Association next year the best in all its history.

A resolution was unanimously carried commending Excelsior Springs as an admirable place for holding scientific conventions.

Dr. A. O. Hunt, Iowa, gave by the aid of the micro-lantern an exhibition of photo-micrograph slides, illustrating sections of jaws and teeth, to show the manner of the blood and nerve sup-

ply of the teeth. The doctor claims that there is no evidence to show that the blood vessels and nerves pass directly from the larger main trunks in the jaw directly to the foramina at the end of root and thence into the pulp. He stated that in over fifty dissections he was unable to trace a nerve or artery directly. He believes that the vessels and nerves break up in small branches which pass through the alveolar process in various directions and enter the peridental membrane, and from this the pulp obtains its nerve and blood supply.

Dr. W. X. Sudduth, Minneapolis, gave a lantern exhibition of slides representing the tissues found in all the varieties of tumors found in the mouth.

Both of these lectures were exceedingly interesting, but because of the darkness in the room we could secure no notes, and if we could it would be difficult to make them intelligible without the illustrations. This is one of the places where the man who will not attend the society meetings, because he can get it all from his journal, gets left.

MORNING SESSION, FRIDAY.

In order to allow Section I to report, the papers read under Sections IV and VII were passed without discussion.

Dr. W. B. Ames, secretary of Section I, reported new appliances, calling special attention to Matthew's combination pliers for crown work and his power blow-pipe; also to Floyd's crescent teeth, which have special points of merit. Also a new form of porcelain crown with the pin baked into it, similar to the Logan crown, invented by Dr. E. Parmly Brown. The pin, instead of being slotted as the Logan pin is oval, made of platino-iridium, and roughened or threaded so as to cause the cement to adhere more firmly to it. The pin is larger at the joint than elsewhere rendering it less liable to break off.

The report presented two papers, one by Dr. C. S. Case on "Crown Work," and another by Dr. Stubblefield on "Amalgamation and Dental Amalgams."

Dr. Case's paper described a new method of making a Richmond crown with porcelain face. For the incisor and cuspid teeth, the root is cut off and trimmed as for the old style wood pivot teeth and a collar is made in the usual way, except that it is made as broad as the crown of the tooth is long. An oval

section is then cut out of the labial and palatal surfaces leaving a cone-shaped projection from the band to the mesial and distal sides of the cutting edge of the crown; into this collar a thin gold plate is burnished and soldered. It is then fitted to the root and if desired, the pin for the root adjusted, and the porcelain crown ground to place, backed for soldering as in the ordinary Richmond crown; these are then cemented with hard wax, removed from the root, invested and just enough solder used to attach the pin and porcelain front to the collar and cap. An impression of the lingual surface of a corresponding natural tooth is then obtained in mouldine and a die made upon which a gold face is swedged, which is fitted and soldered to the lingual side of the crown. This surface can be made with solder at the time that the pin and porcelain front are soldered to the collar as in the Richmond method. But Dr. Case claims not only an economy of material by his method, but a more natural and artistic result, with very little more time and labor.

For bicuspid and molars a collar is made as for the all gold Richmond crown. The buccal face of this is cut out in an oval section, but not quite detached at the center of the face from the collar; this section is trimmed and bent over on the end of the root at far as the root canal and soldered to the collar, making a shoulder upon which the porcelain face is fitted and soldered, in the same manner as for the incisor teeth. If required, a pin into the root can be soldered to place at the same time. The top of this crown is then ground down to allow for the metallic cap, which is swedged and soldered in place in the usual way.

This method of making a bicuspid or molar crown with a porcelain front has decided advantage over other methods, in economy of material, time and labor required, and the facility with which a pin may be used for the root canals. It is also as strong and artistic as any.

Dr. Case instead of using platinum to line the porcelain facing for the purpose of causing the solder to close up the joint, uses jewelers' white enamel, which fuses when the crown is soldered and makes an impervious joint. It is also useful in gold plate work for closing the joint between the plate and tooth and backing. The material may be obtained from any wholesale jewelery house, and needs only to be wet with water and placed in the joint before soldering.

"Amalgams and Amalgamation," by Dr. D. R. Stubblefield, Nashville, Tenn.

Mercury uniting with other metals forms an amalgam or chemical compound. Unlike most chemical combinations no heat is evolved when mercury unites with zinc, lead, tin, iron or nickel; but when combined with sodium, potassium or cadmium heat is evolved. Mercury unites with metals of the alkalies in definite proportions forming definite compounds, but it is impossible to give a formula for the complicated dental alloys used in filling teeth.

Experiments prove tin amalgams to be the best conductors of heat and bismuth the worst. In all cases lessening the amount of mercury used increases the conductivity accordingly. Amalgamation produces chemical compounds which exhibit variable and uncertain results when examined physically.

Amalgam alloys probably do not dissolve into a molecular solution but to a crystalline, the crystals of which are pressed close together, and after the excess of mercury is forced out a solid crystalloid mass results.

Tin, silver, gold, platinum and zinc all unite with mercury to form amalgams of variable qualities, but no amalgam made with any one of these metals is useful for filling teeth. Tin amalgam is too soft and expands in setting. Silver amalgam expands also and sets slowly. Gold amalgamates with difficulty unless heat is applied and is too soft for use. Platinum amalgam will not harden although the presence of platinum in an alloy induces hardening. Copper does not amalgamate readily except when finely divided or as obtained by precipitation. Zinc amalgam is too brittle, but zinc in an alloy is a very useful ingredient. By mixing these metals in proper proportions, in order to secure the peculiar virtue of each, a very useful amalgam alloy is obtained. In the manufacture of alloys great care must be exercised in order to obtain an alloy with definite proportions of the metals used. Care must also be exercised in mixing with mercury, as many excellent alloys will be ruined by the use of an improper amount of mercury.

The writer prefers to use the alloys containing zinc, as they are not likely to change form and do not darken so much as others. He also recommends amalgam as an excellent root filling.

Copper amalgam does not possess any advantage over the

alloys and the writer does not believe that a copper salt having a therapeutic action is formed under such fillings, else there must be solution and ultimate destruction of the filling.

N. S. HOFF, D.D.S., *Reporter.*

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

SOME PORCELAIN AND GOLD CROWNS FOR BICUSPIDS AND MOLARS.*

BY THOMAS G. READ, D.M.D., HARV., L.D.S., ENG., LONDON, ENG.

A CROWN should reduce the chance of destruction of tooth substance to the minimum; be non-irritating to the adjacent parts; natural in appearance; strong enough to resist the strain of mastication, and capable of being quickly constructed, with little pain to the patient. No crown fulfils the above requirements so well as a cap crown.

Two forms of porcelain and gold cap crowns for bicuspids and molars will be described; the first will be the stronger consisting of a metal band and articulating surface and a porcelain face; the second the more natural in appearance being a porcelain articulating surface and face and a metal band.

When properly made, a cap crown protects the tooth substance from the action of the contents of the oral cavity; if the band is well adjusted to the stump and corresponds with the alveolar margin and the porcelain is ground flush with the band, it is non irritating to the surrounding parts; with a porcelain face the appearance is very life-like; the stump is greatly strengthened, the band forming a ferrule and it is capable of being quickly constructed with little or no pain to the patient.

A chronic abscess in connection with a broken down tooth discharging itself through a fistulous opening that shows no tendency to yield to treatment by medication will often rapidly dis-

* Read at the Tenth Annual Meeting of the British Dental Association, at Exeter, Aug. 22, 1890.

perse where the canal is made antiseptic and filled and the stump crowned and bitten on.

When about to crown a stump adjust the rubber-dam if possible and fill the pulp canals, then reduce the broken down crown in height to allow for restoration of occluding surface and to give room for the porcelain. The stump is left standing as high as possible above the gum at the lingual surface, but gradually sloping to the labio-cervical margin of the stump, which should be just below the gum edge. The sides of the stump as far as the band is to extend are made quite parallel, so that the crown fits tightly like the lid of a tin cannister. This is best accomplished by scraping away all over-hanging and projecting tissue with chisels of suitable shape and finishing the stump smooth with a safety-pointed shouldered fine file fissure bur. If the projecting and over-hanging part of the stump is not pared off the band will not fit, be very painful, and form a space beneath the gum around the stump for the accumulation of decomposing materials. When the stump is shaped cone-like the band will stretch, and this becomes loose every time it is removed in fitting and it may be driven past the portion trimmed, owing to this tendency to increase in circumference, when the projecting edge will be a constant source of irritation to the surrounding tissue, moreover the ledge thus formed will permit of the accumulation of decomposing secretions. The stump being prepared, an impression should be taken of it, the chief point required being the gum edge as this roughly corresponds to the alveolar socket margin.

On an impression taken in the ordinary manner, where the stump is broken down level with the gum, it is impossible to tell exactly where the gum edge is; when the stump stands well above the gum the model obtained in the ordinary manner will be found nearly useless. To obtain a model that will really be of assistance, take a thin strip of telephone plate and roughly shape it to the gum edge and bend it to the stump, when roughly fitted a small piece of softened composition is pressed to the band and stump and bitten into; as soon as hardened it is removed together with the band. Cast a lower and upper model from this with the little band *in situ*, now you have the occluding and adjacent teeth and the stump with the little band around showing the exact position of the gum edge. Outside this band make

the gold band of the crown to fit it and the gum edge, make the join at the lingual surface. The band having been fitted to the model, soften the end of a stick of composition and press the band on with the edge to go under the gum uppermost, this is further edged with a fine round file. Take a small piece of the same gold as used for the band of the crown, and in Messrs. S. S. White's die plate strike up cusps for the articulating surface. Try the struck up cusps to the occluding model and see if the bite will ride, mark where it will, place the cusps on the male die or soft metal used to strike them up and with blunt punches knock down those places marked; the articulating surface thus being made perfect, file up some solder and mix it with a little Parr's flux, fill the cusps rather full and flow the solder over a Bunsen flame.

The patient is now seen and the band carefully fitted in the mouth and soldered edge to edge over a Bunsen flame, using binding wire as a clamp. The band is then contoured, and if the canals have not been filled owing to the stump being so much broken down that the rubber-dam could not be applied, a piece of binding wire is twisted with a bead or two upon it around the band and being placed on the stump is used for holding the rubber-dam. The band being on the stump with a sharp point mark the position of the gum edge at the labio-cervical margin. Soften the end of a stick of composition and press the band on occluding edge uppermost; then cut away the labial face to the labio-cervical margin. Select a wide flat tooth the correct shade and shape. Set this to the labial face of the band where it has been cut away and back it, when this is finished wax the tooth to the band and try in to see that the porcelain is clear of the bite, then invest and solder. Try the band and porcelain on the stump and let the struck up cusps in until the bite is perfect. Wax the cusps to the band, invest, solder, boil in acid, trim with a fine corundum wheel and polish. Horizontally groove the pulp chamber, dry it out and fill it and the interior of the crown with oxyphosphate of a creamy consistency, press the crown on the stump with a notched tooth-brush handle and expel the excess of cement with one or two blows from a lead mallet. When the setting is hard, trim away any excess of cement with a broken back chisel.

A very natural crown but not so strong as the above may be

made as follows: Prepare the stump, take an impression, cast it and fit a gold band to it as for the above crown. Select a saddle back tooth of the required shade, shape, size and depth; with a safety edged corundum wheel grind the pin surface flat, back it, bending the pins inward as then they are not in the way at the labio-cervical margin. The articulating surface of this tooth is ground to the occluding model. The patient is seen and the band carefully fitted to the stump in the mouth and soldered edge to edge, replaced on the stump and with a sharp point the position of the gum edge is marked at the labio cervical margin. Soften the end of a stick of composition and press the band upon it with the occluding edge uppermost, then with a fine flat file cut the occluding surface of the band flat, having a gradual slope from the lingual surface to the mark where the labio-cervical margin is. Try the backed saddle back tooth and the band in the mouth to see that the occlusion is perfect, when correct wax them together, invest, solder the backing to the edge of the band, using as little solder as possible, boil in acid, trim, polish and set the crown. The band of a bicuspid or molar cap crown holds it on very securely without a dowel. When a fixed dowel is used there is a great tendency to fracture the root, if such strain is brought to bear upon the crown that it is loosened.

TEETH TOO SHORT.

BY PROF. L. P. HASKELL, CHICAGO.

IN a very large proportion of artificial dentures, both upper and lower, the teeth are *too short*. I will mention several of the results which follow.

It causes a compression of the lips, giving a bad expression to the mouth. It throws the lower jaw too far forward, making it necessary to set the upper teeth too far forward, and so protruding the lips. It makes the lower jaw tired for want of a proper resting place, and mastication is rendered more difficult.

In arranging teeth for patients with short upper lips it should be borne in mind that their natural teeth showed, more or less, when the lips were at rest, and often one-third the length of the teeth were thus exposed. The artificial ones should occupy

the same position. But perhaps the patient has been wearing teeth a number of years and the gums having receded the teeth are much shorter than when first worn, and either through the fault of the dentist or an objection on the part of the patient, the new teeth are made too short. By wearing short teeth the lips have shortened, but upon lengthening, the bite the lips will soon resume their normal condition.

I often have noticed cases sent to me with the teeth arranged (sometimes continuous-gum cases), where the necks of the anterior teeth overlapped the surface of the plate one-third their length, and this, too, where the teeth were short and not too long for the case, even if the necks of the teeth rested against the margin of the plate, as they should have done, and even then no allowance would be made for the recession of the gums by absorption which would have brought the teeth still lower down.

When arranging teeth for such cases, if patients object to the length, inform them that by the lengthening of the lips, which will surely occur, they will soon cease to consider the teeth too long.

BABBITT METAL *vs.* ZINC.

MR. EDITOR:—The following letter is one of many I have received from time to time, showing the appreciation of dentists of Babbitt metal dies, and, as the writer says, “cannot conceive why some will stick to the old time zinc.”

Another dentist once said to me, after using the Babbitt metal for a month, and doing a large amount of metal work: “It makes me mad when I think how I have bothered with zinc for twenty-five years, when there was such a metal as Babbitt that could be used, and I did not know it.”

The dentist who says he has found “no metal so reliable as zinc,” never has used a *proper* Babbitt. It is not the *pouring* of zinc that alone gives trouble. It necessitates the use of *wet* sand, and the constant necessity of guarding against air bubbles, a trouble that never occurs with oiled sand which can be packed hard and is always ready for use. And the man does not live who can fit plates as easily and as uniformly perfect with Zinc as with Babbitt.

L. P. HASKELL.

"MY DEAR DR. HASSELL:—I cannot help writing to you to let you know how I appreciate your efforts to let the profession know of the value of Babbitt metal for dies. I for one am truly grateful to you for such an easy and perfect method of making dies for metal work. I use marble dust moistened with glycerine in place of moulding sand which I think is more cleanly. I place my metal on the gas stove and by the time my mould is ready it is ready to pour, occupying generally not over fifteen minutes. Surely I cannot conceive why some will stick to the old time zinc method with all its objections when such a clean, easy and certain method is obtainable. I have used this method for over seven years, in fact from the time I first saw the notice of it you gave to the profession. Very truly,

AUBURN, N. Y., Oct. 5, 1890.

F. H. LEE."

NEW METHOD OF VULCANIZING RUBBER PLATES.

BY GEORGE B. SNOW, D.D.S., BUFFALO, N. Y.

IN *The Dental Advertiser* for 1887, the subject of *shrinkage of rubber* during the vulcanizing process was discussed at some length. It was shown that during the process of hardening, a mass of rubber compound experienced an actual decrease in bulk, its specific gravity being considerably increased. The *expansion of rubber by heat* also received some notice, and the following experiment was suggested, as affording proof of the facts asserted:

"Let a cube of unvulcanized rubber compound be made of about $\frac{3}{8}$ inch dimensions. It may easily be built up of squares cut from a sheet of gum. Let it be invested in plaster in a dental flask, by placing it on a bed of soft plaster and immediately filling the flask. There will be no parting joint, and no escape for the rubber. Let this be vulcanized after standing twenty-four hours, or long enough to insure a complete and thorough hardening of the plaster.

"It will be observed that the plaster has cracked at each angle of the cube, and a thin fin of rubber has been ejected into the opening. The expansive force of rubber, as illustrated above is one source of the trouble experienced in putting up dental plates. If the rubber is closely confined, a force may be exerted

by its expansion which the contents of the flask can not resist. Broken blocks, open joints between the sections, teeth forced out of place; all these annoyance are due to the close confinement of the rubber by insufficient gateways, or from their being filled with surplus rubber by careless packing.

"Another inspection of this cube will show that the sides, instead of being flat, as they were when it was flaked, are concave. In this case, the shrinkage, following the plane of least resistance, took place chiefly on one side—the top; small air bubbles in the plaster retaining the other sides, and preserving them in nearly their original shape. The concavity, being nearly all on one side, is all the more perceptible. The explanation of this phenomenon is very simple: the rubber, as it hardened, became more dense, and suffered a sensible diminution in its bulk. This shrinkage is inherent to the process of vulcanization, and occurs with all rubbers, unless vulcanized at such a heat as to render the mass spongy in the center. The manner of vulcanizing makes little if any difference. Whether invested in plaster or closely enveloped in heavy tinfoil; whether vulcanized under water or in steam; whether the compound be rubber and sulphur alone or largely composed of pigment or other foreign matters; black, red, pink, or amalgamated rubbers; the result in all cases is the same, varying in degree according to the amount of foreign matter contained in the compound. Sides of samples which were flat before vulcanizing are invariably concave afterwards."

The term "shrinkage" will be used in this article to designate the alteration in bulk and specific gravity which rubber undergoes in the process of its transformation into vulcanite.

The terms "expansion" and "contraction" will be similarly used to denote the changes in the mass by changes in the temperature.

The term "mechanical pressure" will be used to denote the pressure brought to bear upon the contents of the mould by the act of closing the flask.

The pressure which the rubber exerts upon the mould as it expands when heated, will be called "expansive pressure," in contradistinction to "steam pressure," which is brought to bear upon the flask and its contents by the evaporation of water contained in the vulcanizer during the vulcanizing process.

Shrinkage is greater in amount, in proportion to the purity

of the rubber compound. Its effects are well known to be more apparent and more annoying with black than colored rubbers; the latter containing a large amount of foreign matter, which undergoes little or no change during the vulcanizing process. Black rubber has, indeed, been discarded by many, on account of its excessive shrinkage; notwithstanding the fact that deleterious effects upon the health have been observed arising from the use of red rubber in the mouth.

The effects of shrinkage may be seen, and have often been noticed by those who, in the process of repairing rubber plates, have occasion to remove a block of teeth therefrom. If there is any considerable amount of rubber under the teeth, a space will be found between the two into which a thin instrument can be easily passed. This space is usually a receptacle for the debris of food, which, being there retained, decomposes and gives off disgusting odors.

It is the frequent experience of those wearing rubber plates, that, notwithstanding any efforts which may be made to secure cleanliness, the odor from them will be sufficiently strong to affect the breath. The reason is apparent if there are pockets under the teeth, full of decomposing organic matter.

This condition of things was known and recognized in gold plates, when the teeth were ground and fitted to the plate, and afterward backed and soldered thereto. No one could make a joint under such circumstances so close as to exclude organic matter. And one reason why rubber came so rapidly into use, was the fact that it seemed to promise immunity from this defect.

Sometimes defects betokening shrinkage will be apparent, as when crevices are seen at the shoulders below the crowns of bicuspid and molars; but it is more often the case that the dentist is wholly unaware of any imperfection in the plate. The joints between the teeth and rubber will appear to be perfect, the defects remaining unsuspected, possibly until repairs are needed, and it becomes necessary to remove some of the teeth from the plate. At this time it will often be found that the teeth are imperfectly supported, there being spaces under them filled with the debris of food, and that, moreover, the pins are not well anchored in the rubber. If plain teeth have been used, the defects are often apparent from the start, and single teeth, standing alone, are sometimes so loose as to necessitate making the plate over.

The assertion is here made that the defects mentioned above are the rule, and not the exception; and although the statement will, no doubt, be denied, it is the fact that their existence can be demonstrated in the majority of rubber plates.

There is also a question whether shrinkage is not to blame for the difficulty sometimes experienced in fitting rubber plates to mouths requiring a considerable amount of so called "restoration," involving the use of a large amount of rubber over the alveolar ridge. It is the experience of any dentist who has had much to do with rubber plates, that the best fits and most satisfactory plates are those in which it is possible to set the teeth close to the alveolar ridge, leaving but little rubber under them; while annoyance is usually experienced when the use of a large quantity of rubber is required at this point. These facts have been recognized and deplored by many dentists, but as yet no one has pointed out a method by which shrinkage can be perfectly controlled. It is almost a self-evident proposition that if the rubber can be made to apply itself closely to the teeth, leaving no interstices for the detention of particles of food, securing perfect support to the teeth and perfect anchorage for the pins, that a more cleanly, durable and satisfactory denture can be constructed on vulcanized rubber than has hitherto been done.

A few experiments recently made have thrown some light upon the subject, and it is now believed that a method can be pointed out by which the defects and annoyances heretofore alluded to can be wholly overcome, and that the perfect vulcanization of a dental plate can be made an easy matter. The results of these experiments and the process of vulcanizing deduced therefrom, will form the subject matter of the succeeding portion of this paper.

To determine the time at which shrinkage occurs, a number of samples of rubber were vulcanized at times varying from ten to ninety minutes, at the same temperature, 320° ; the Coolidge Regulator being used to insure uniformity in temperature.

The specific gravity of the specimen of unvulcanized black rubber was 1.13398. The same rubber vulcanized for forty minutes at 320° and imperfectly cured, had a specific gravity of 1.19082. At the end of one hour, when it was thoroughly hard, it was 1.19284. It will be observed that the increase of specific gravity for the first forty minutes was $1.19082 - 1.13398 = .05684$,

while for the next twenty minutes it was only .00202; showing that the greater part of the shrinkage took place in advance of the hardening process, and was nearly completed during the first forty minutes. The relative bulk of the same mass of rubber, soft and vulcanized, would therefore be 1 to .9506.

The writer has been unable to find any data giving the rate of expansion, by heat, of crude rubber. Samples from different localities differ to some extent in their physical characteristics and in their composition; and it is quite possible that their rate of expansion, if ascertained, would be found to vary. It has been found experimentally, however, that the expansion of vulcanizable gum from 212° to 320° amounts to about as much as its shrinkage in vulcanizing.

The expansion of vulcanite (black) is set down as .0000428 of its length for each degree (Fahr.) between 52° and 77° . Between 77° and 95° it is .0000468 for each degree. These numbers give the average between the temperatures named. It will be observed that the rate of expansion increases with the temperature, as is usual with solids. Allowing that the rate of increase remains constant, its linear contraction in cooling from 320° to 80° will be as 1 to .99369. Its cubical contraction, or decrease in bulk, would be as 1 to .9812; much less than its shrinkage. By the conjoined action of shrinkage and contraction, a mass of rubber, being vulcanized, would be reduced in bulk as 1 to .9388.

In the ordinary method of moulding a plate in a bolted flask, gateways are cut, to provide for the escape of surplus rubber, and the mould is packed with a sufficient quantity of gum to fill it. The two parts of the flask, being bolted together, are heated to soften the rubber, and the flask is closed; any surplus rubber oozing from the mould into the gateways. The flask is then put into the vulcanizer, and heated to the vulcanizing point. While the heat rises, the rubber continues to expand; and it is constantly oozing from the mould into the gateways. If it were cooled, even before it reached the vulcanizing point, there would certainly be a vacuity somewhere in the mould from contraction.

The moment the vulcanizing point is reached, and the temperature becomes stationary, shrinkage begins; the expansive pressure is relieved, and in a few moments the mass of rubber becomes too small to fill the mould. As it adheres to the surface of the plaster, it is drawn away from the teeth and pins, to which

it has less adhesion; as the rubber will not pass from the narrow gateways back into the mould to fill the vacuity, except possibly to a very limited extent.

If radiating gateways are not cut extending into the mould, but merely a circumferential chamber of escape be employed, from which the rubber in the mould is entirely cut off as soon as the flask is closed, the use of bolts to hold the parts of the flask will be found to be very dangerous. The rubber, in its expansion as it is heated to the vulcanizing point, will exert a force which the plaster mould cannot resist, and the consequence will be the injection of rubber into the joints, and possibly the cracking of the blocks and their displacement.

If the mould, prepared in this manner, is held in a spring clamp while vulcanizing, the expansion of its contents will cause the spring to yield, allowing the flask to open a trifle; and a certain quantity of the rubber will escape into a chamber surrounding the mould. The escape will not be free, and the natural elasticity of the rubber will allow of the retention of some of it which would escape if the radial passages were present. The increased pressure upon the rubber will be likely to cause its injection into the joints between the blocks, and if any of it escapes there will be a vacuity from shrinkage; it is quite possible, however, that it will be less than in the former case.

To produce perfect results, the mould must contain just that quantity which will fill it when vulcanized, at a temperature so low that it will have no tendency to "flow," or change its shape permanently.

After the rubber is pressed into the desired shape, or in other words, after the mould is packed, it must be relieved of any constraint which will resist the expansion of its contents by heat and cause them to escape.

After the shrinkage incident to vulcanizing has taken place, the mould must be pressed, to force the rubber against the teeth and pins; and this pressure must be continued until the plate is nearly or quite cold.

To test this theory, a set of teeth was mounted, setting them at a considerable distance from the model. They were flaked, the usual gateways were cut, radiating from the mould, with an encircling channel. The mould was then packed with black rubber, substantially in the manner above suggested. The flask was

left free to open as the rubber expanded by heat, and pressure was applied to close it, nearly at the conclusion of the vulcanizing process. Another set, a counterpart of it, was mounted, flaked in a bolted flask, packed with the same kind of rubber, and vulcanized in the ordinary way; the flask being firmly bolted during the process. Both sets were allowed to remain in the flasks until cold. When they were vulcanized and finished, one set could not be distinguished from the other. They were both perfect, so far as could be judged by outward indications.

A bicuspid block was then broken out of each set. In the first set, the pins which held the block were found to be firmly held by the rubber, which also fitted closely against the under sides of the teeth, so that the joint was apparently perfect. In the other, the pins were loose; and there was a considerable vacuity under the remaining blocks, nearly thirty-second of an inch in depth.

The sound given forth by these plates when dropped upon the table was distinctive and chasacteristic. The first gave a ringing sound as though it were but one piece; the other rattled as if cracked. They could be easily distinguished from each other in this way with the eyes shut.

This experiment was performed with the Crane vulcanizer, which has a screw-press attached to it, with a spring interposed between the screw and the presser-foot which bears upon the flask. This mechanism gives perfect command of the amount of pressure applied to the flask and the time of applying it. It therefore fills all the requirements of the method of vulcanizing suggested above; giving a gradual and equable pressure, which can be applied at any time during the vulcanizing process, as desired. The amount of time and attention required is but a trifle more than is requisite with the old method.

A number of plates have since been moulded by this method, for use. Their adaptation to the moxth is good, and they have proved satisfactory in every way.

The same results can be attained in an ordinary vulcanizer, but it will be necessary to heat the flask twice. It will also be advisable to use some kind of a spring clamp, possessing power enough to make the rubber flow and re-adapt itself when reheated. The *modus operandi* will be as follows: Pack the mould with rubber as usual, and close the flask either with bolts

or a flask-press, as may be preferred. Before putting it in the vulcanizer, slack off the bolts sufficiently to allow the flask to open when the rubber expands by heat, so that it will not be forced into the gateways. After it is vulcanized, let it cool slowly until there is no steam pressure upon it; then remove the flask, place it in the spring clamp, replace it in the vulcanizer and re-heat it to 320° , and allow it to cool slowly. It is *always* best to keep the flask in the clamp and under pressure until cold.

In this case, the mould contains more rubber than it would if held firmly, by the amount which would have been forced into the gateways by expansion as the heat was raised to the vulcanizing point; and this amount is sufficient, or nearly so, to completely fill the mould while hot and after vulcanization. The rubber is harder and not quite so tractable as when partly vulcanized, and the process requires more care and attention than is required with a vulcanizer capable of pressing the flask at the proper time while vulcanizing; but the operator is thus enabled to test the theory herein set forth, and to satisfy himself of the benefits to be secured by putting it into practice.

This process may be varied by first vulcanizing the plate about three-fourths the usual time; then applying the pressure and re-vulcanizing to finish.

The following precautions must be observed. Any sudden change in the steam pressure may result in the formation of steam in the flask, and injury to its contents; as it is not held together as it usually is. Therefore no escape of steam, by opening the blow-off or blowing out the safety-disk, should be allowed. Neither should the vulcanizer be suddenly cooled by putting it in water, or otherwise.

It is believed that the results obtained will amply repay the operator for what little additional trouble he will incur in using this method of vulcanizing.—*Dental Advertiser*.

“SIMPLE METHODS.”

ANSWERED BY W. N. MURPHY, D.D.S., LAGRANGE, TEXAS.

I SEE an article in the Sept. number of the JOURNAL, from the able pen of Dr. L. P. Haskell (whom I have enjoyed reading

after for a number of years), in which he criticises an article on swaging plates which appeared in the *Texas Dental Journal* of May. Now I would greatly enjoy being in Dr. Haskell's laboratory for even a much longer time than "ten minutes to see the difficulties of sand moulding vanish," and to partake of the many other good things that he would be able to give me, but since it is a fact that many good operators reach the same results by decidedly different methods, I desire to say that, should I ever have the pleasure of meeting with the Doctor even in or out of my laboratory, it will afford me great pleasure to demonstrate to him that a metal plate swaged on a die which was cast directly into the impression is at least as accurate as any sand moulding and can be done in much less time; or is immaterial what metal is used for a die just so it is so cast as to furnish a fac simile of the mouth, and be sufficiently hard to retain its form in swaging. As I have never used Dr. Haskell's formula for Babbitt metal, I am not prepared to say that zinc is the best, but the Babbitt metal which is on sale by the dealers will not retain its form, but I presume Dr. Haskell's formula can be cast directly into the impression also. It would be useless to take as many as three or four impressions (as described in the paper) except to guard against accident in case the patient should live at a great distance, but the patient who is not willing to submit to the inconvenience for a good fit is not worthy of it. I suppose the Doctor does not always confine himself to any one method, neither do I always use a zinc counter for the final swaging, but in certain cases it can be used with great advantage especially in partial cases, and when I wrote it was the result of actual experience, but as my article was intended to show the advantages of a die cast directly into the impression I will give a formula for impression material which is not just the same as the one referred to, but will meet the requirements of any case: Plaster, 1 qt.; marble dust, 1 pt.; chalk, 1 pt. Mix and use as plaster. Now if the Doctor is able to pull an inch peg through a half-inch hole without stretching the hole, I will admit that I am wrong.

THE CARE OF VULCANIZERS.

VULCANIZERS are gradually weakened and eventually destroyed by corrosion. When the sides of the vulcanizer are weakened

by corrosion to any great extent, the fact is easily ascertained by tapping them lightly with a small hammer. If the metal is thick and strong, it will be elastic, and the hammer will rebound from a light blow, though of course copper would yield to a heavy one. When the metal is quite thin, the sensation will be as though the blow were delivered upon lead. There will be little if any rebound, and the metal will be driven in and dented by a very light blow.

Corrosion occurs to a certain extent from exposure of the vulcanizer to air and moisture. Indeed, it is by no means sure that the greater part of it does not thus take place. It is a good practice to clean the vulcanizer pot, and wipe it dry before laying it away after use.

When a screw fastening like that of the Whitney vulcanizer is employed, mischief is often done by the inordinate use of black-lead or soap-stone powder upon the packing joint, and incidentally upon the screw. The particles of which either of these powders are composed, are hard enough to wear away metal if placed between two rubbing surfaces, and in consequence the screw threads of vulcanizers are sometimes so worn that they have not sufficient hold upon each other to retain the cover; which on some fine day mounts to the ceiling, and disappears in the lath and plaster, much to the surprise and disgust of the owner.

The reason for applying soap-stone or plumbago powder to the surface of the packing seems, in many cases, to be entirely misapprehended. Its only office is to prevent the packing from sticking to the edge of the pot. A minute quantity only is required for this purpose, and its application need be made but seldom. If it is applied too liberally or too often, it will form a thick coating on the surface of the packing, which will be porous and will be the cause of leakage. When the coating attains any great thickness, it will scale off; and the leakage, which may have been almost imperceptible before, will now be increased to such an extent as to be annoying. Possibly the dentist does not detect the cause of the trouble, and, thinking that the vulcanizer "works hard," applies oil to the thread. This is burnt by the heat of vulcanizing, and the cover is virtually cemented to the pot. It is now removed with difficulty, if at all. As a rule, when the packing of a vulcanizer is in good order and steam-tight, the less that is done to it the better.

There is another matter connected with the management of the vulcanizer, which frequently causes great annoyance if not properly understood. If the vulcanizer is too full of water, not allowing adequate room for its expansion when heated, a pressure will be developed much greater than that due to the production of steam. The safety disk will in this instance be blown out, possibly at as low a temperature as 280° or 300°. Or if the safety apparatus be put out of order, the vulcanizer pot may be bulged and stretched out of shape, or a rupture may be the result, and a so-called explosion ensue.

It must be remembered that water is inelastic, and that when it is confined, with inadequate room for its expansion, the resulting force is practically irresistible. It is an easy matter, if the vulcanizer be wholly filled with water, to obtain a pressure of six, eight, or nine hundred pounds to the square inch, without heating the water to the boiling point. Is it any wonder that they sometimes give way when carelessly used?

A safe rule is to allow one-sixth at least, better one-fourth, of the capacity of the vulcanizer for steam room. The user of a vulcanizer should never lose sight of the fact that it is a steam boiler, and is subject to deterioration by use. The rules for its management should be thoroughly read till clearly understood, and carefully observed, and after the vulcanizer has been in use for a time it should be inspected frequently, and any signs of weakness carefully noted.—*Abstract from article by Dr. G. B. Snow in Dent. Adv.*

VULCANIZING A FINISHED PALATAL SURFACE.

My method of making vulcanite plates, by which the palatal surface is finished in the vulcanizer, with the rugæ to give a natural feel to the tongue, and to assist in enunciation, is as follows: Required, to begin with, tough, base-plate wax, and No. 60 tin foil. Use the wax for setting up the teeth, and for trial in the mouth, having worked it neatly on the model, keeping hands and everything scrupulously clean. Build on with the melted wax, the rugæ, as the plaster model indicates. Invest in lower half of flask as usual. When plaster sets, take a half sheet of the heavy tin foil and burnish down carefully over the surface of base-plate wax, using, at first, the smooth, rounded end of a scraper handle, or something similar, about half an inch in diameter, followed by

a plate-burnisher. Keep out over-laps and wrinkles as much as possible. Burnish nicely and allow the tin to lap just over the grinding surfaces of the teeth to hold in the plaster, when fully invested. Work in the tin between the crowns and in all depressions in the grinding surfaces of the teeth. Trim neatly all around and turn up a flange behind the plate. Now, invest in the upper half of flask as usual. Before parting the flask, warm slightly; and burnish nicely the entire surface of the tin before packing.

Of course, the wax plate must be trimmed and finished before final investment, precisely as it is wanted when inserted in the mouth. The rim above the teeth is to be finished in the usual way after vulcanizing, but nothing will be required to be done to the lingual surface except to remove asperities and trim closely around the teeth. The lingual surface of the plate is thus finished in the vulcanizer, and will have a polished surface much more agreeable to the wearer than one made in the usual way, while the work of scraping and polishing is avoided, and three-fourths of the labor of finishing is saved to the workman. The work is artistic in appearance, and so much more satisfactory to the wearer, that no one will afterward consent to wear a plate finished in the usual, clumsy way.—DR. M. D. L. DODSON, *Items*.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

TO PREVENT DISCOLORATION OF METAL BACKINGS.—Coat with a solution of boracic acid.—DR. L. E. CUSTER, Dayton, O.

A THICK TINCTURE OF BENZOINE on cotton is an excellent substitute for sandarach as a temporary stopping. It deserves consideration also as a material for filling roots.—*Odontographic*.

BLUE GOGGLES FOR THE PATIENT.—Although the operator says of light, "the more the better," not so the patient. To have to sit facing a bright light, especially an artificial one, during the insertion of a gold plug, is no slight task. We have all had patients complain, and have no doubt sympathized. But it

seems (as far as we know) to have been reserved for Dr. Babcock to hit on the simple expedient of a pair of "blue goggles." He keeps a pair handy, which though certainly formidable to look at, are much appreciated by his patients. Try it.—*Brit. Jour. of Dent. Science.*

THE SPIRITS OF GUM-CAMPHOR will remove all irritating or caustic effects of carbolic acid. If the skin or mucous membrane should accidentally be burned by the use of carbolic acid, apply strong spirits of camphor on cotton, or if the burn be large, apply a paste made of the gum moistened with alcohol; it will require but a few moments for this remedy to remove all injurious effects of the escharotic. Do not leave it on longer than is necessary and no unpleasant effect will follow its use.—B. Q. STEVENS, *Archives.*

THE EFFECT OF DENTAL JOURNALISM UPON THE PROFESSION.—DR. CHISHOLM in the Southern Dental Association meeting expressed the opinion that dental periodical literature had been more effective in making the science and practice of dentistry what it is to-day than all other agencies combined. He considered most praiseworthy and encouraging the professional spirit exhibited by the eagerness with which every new idea, invention, or method was spread before the profession for the good of all. It is evidently the desire on the part of practitioners to be the first to tell that which others do not know, and thus make a common fund of knowledge from which all alike can draw. Dental journalism represents the circulatory system which carries the pabulum for the upbuilding of the tissues in the professional body. It is indeed the life-blood of dentistry.

A GOOD OBTUNDER.—DR. VAN VALZAH says: I have been using, for sensitive dentine, pip menthol, alcohol and tincture of myrrh. In a large majority of cases it has proved very beneficial. In some cases the moment that it would come in contact with the dentine the patient was made to cry out. But, as I said, in a majority of cases it has proved very satisfactory. I will further say that I use this as a local anæsthetic. I have taken out many roots that were broken down below the alveoli, and the patient has had no pain whatever. In most of my cases I have had persons say it cut down the pain a great deal. I have

had persons who had several sittings for the preparation of their mouths, and who, on coming back, requested that I use the remedy.

The formula is as follows :

Pip menthol -	-	-	-	2 ounces.
Tincture of myrrh	-	-	-	6 ounces.
Alcohol -	-	-	-	10 ounces.

A METHOD OF ADJUSTING LOGAN CROWNS.—This crown resembles a Logan in the fact that it is a tooth with a platinum pin baked into it; an ordinary plate, rubber, or counter-sunk tooth may be used for the purpose, preferably the latter. The root is prepared as for an ordinary Logan crown, and a platinum pin placed in the canal, and an impression is taken; a small plaster-model is then made, leaving the pin in the model in the same position as in the root; the model is shellaced and oiled slightly, and, if a rubber tooth is to be used, it is placed in position and body (such as is used for carving) packed around the pins and over the end of the root, and trimmed to the desired shape and size; it can then be removed and baked in a gas furnace in a few minutes. The method of using a counter-sunk tooth is slightly different: The counter-sunk portion is filled with soft body, which is pressed down on the model with the pin in position; the soft body conforms perfectly to the end of the root, and the pin to the direction of the canal; it is then trimmed, removed and baked, and is ready for insertion without grinding. The advantages of this method are obvious: the crown has the same diameter as the end of the root, and conforms to its contour perfectly.—DR. STODDARD, *Archives*.

TREATMENT OF ROOT-CANALS.—DR. G. B. CLEMENTS says: Never use a bur or drill in the canal of a tooth if possible to avoid it, and never open with bur or drill beyond the floor of the pulp-chamber. Expose each canal perfectly before entering it. Use broaches and root canal cleansers, being careful not to force any debris through the apex of the root. Wash out successively with tepid water, peroxide of hydrogen, and dilute alcohol, and be sure to get the canal dry.

As a filling-material he recommended virgin gutta-percha dissolved in chloroform, filtered, with oxide of zinc added to make a cream. To introduce the material he uses a feather trimmed

close from tip to bottom. This will follow almost any canal, and the beard upon each side pointing upward acts as a first-class carrier. There is no danger of employing too much force. It will not only carry filling-material, but may be said to carry medicaments through the canal and into the sac of an abscess. Of course the feather must be made thoroughly aseptic by being soaked in a solution of bichloride of mercury.

When the canal or canals have been pumped full, he takes a peg of fat pine, shaped to fit the canal as nearly as possible, which has been dipped in carbolic acid, dried, and then dipped in the chloro percha mixture. He forces this gently into the canal and cuts it off. He thinks that the less the canals are drilled or medicated, the better the chance of success.—*Cosmos*.

TREATMENT OF HEMORRHAGE AFTER TOOTH EXTRACTION.—Tannic acid, administered internally in proper doses, will stop I believe, any case of hemorrhage caused by tooth extraction, in from thirty minutes' to one and one-half hours' time. The manner and results of administering this very simple remedy I will illustrate by one case in practice.

I was called, March 25, 1885, at 8 P. M., to check hemorrhage from the lower gum of a lady, caused by the removal of eight badly-decayed and broken-down teeth. They were removed while patient was under nitrous oxide gas, with no more laceration of the gums than generally occurs. Patient did not bleed very profusely at the time, but as she was of a hemorrhagic diathesis I kept her there until it had entirely ceased, with instructions to call me at once if there was a return of the hemorrhage to any great extent. As she lived some distance away, and being at home alone, I did not hear from her until about 7 P. M., when her husband came to me with the information that his wife was bleeding to death. I immediately went to their residence and found the patient in a bad state indeed. Pulse was very weak, and she looked about ready to expire, but there was life, and, upon inquiry, I found that she had expectorated nearly one quart of blood. Upon examination I found blood oozing from all portions of the gum. I immediately placed three grains of tannic acid in one-third glass of water and gave her two teaspoonfuls every five minutes until she had taken three doses, then two teaspoonfuls every fifteen minutes; after the second dose the flow

had diminished to such an extent that I left them with instructions to administer the same amount every half-hour, which they did, and were only obliged to give two doses before it ceased entirely, with no return.—DR. W. L. ROBERTS in *Inter. Jour.*

IMPLANTATION.—Perhaps the operation that attracted the greatest interest was one by Dr. Younger, of San Francisco, who implanted a tooth that had been taken from a mummy. He also exhibited a young lady's mouth in which he had implanted, I think, nine teeth. I had opportunity to examine her mouth in a hasty manner at the close of the clinics on Thursday. There was one (or two) implanted teeth in the lower jaw that were utter failures, if it may be called a failure when the gum recedes the entire length of the root, the root itself looking green and uncanny, the whole aspect indicating that aesthetic old dame, Nature, was trying to throw off the disagreeable attachment. The two central incisors below had been implanted and were certainly firm, although the gum had receded almost to the apex of one and was getting there on the other. It is only a question of time when the two lower incisors will go, and probably not a long time either. Some two or three of the upper teeth (I think bicus-pids) were going the way of things unnatural, affording an illustration of the sentiment uttered nearly two thousand years ago, that we cannot patch old garments with new cloth successfully. Of the upper implanted teeth, as observed, some two or three were giving away badly, the gum having receded to the apices so as to expose the entire labial extent of their roots, and the roots themselves looking a nasty greenish color. The young lady told me that the teeth mentioned had not proven successful in all respects, and I think she was right. On examination inside of the arch I discovered a gold support that had been swaged to extend all around the palatine aspect and partially conform to the implanted teeth, not only the ones mentioned, but the others in the upper jaw had been secured to the gold support by silk ligatures. Of course the teeth did not move under such circumstances, but to be firm while thus supported, is no evidence of success. The presence of the support and ligatures is a practical acknowledgment of a lack of confidence in the operation by the operator himself, and I verily believe that if the support and ligatures were altogether removed at the Congress the implanted

teeth would be all of them a-rattling by the time the young lady reaches San Francisco.—*From Dr. J. E. Cravens' report Int. Congress, W. Dent. Jour.*

Books and Pamphlets.

A SYSTEM OF ORAL SURGERY BEING A TREATISE ON THE DISEASES AND SURGERY OF THE MOUTH, JAWS, FACE, TEETH AND ASSOCIATE PARTS, by JAMES E. GARRETTSON, A.M., M.D., D.D.S., President of the Medico-Chirurgical Hospital and Emeritus Professor of Oral and General Clinical Surgery in the Medico-Chirurgical College; Dean of the Philadelphia Dental College; Surgeon in charge of the Hospital of Oral Surgery; Member of the Philadelphia County Medical Society, etc., etc. Fifth edition thoroughly revised with additions. Philadelphia: J. B. Lippincott Company, Publishers. 1890. Price, cloth \$9.00. Toledo, O., Brown, Eager & Co., Book-sellers.

This reliable work on oral surgery is so well known among the dental profession that more than a mere notice of the appearance of the fifth edition thoroughly revised and enlarged seems unnecessary; yet, to impress our readers with its scope and completeness we will give something in the way of a general outline of the present work showing what an exhaustive treatise it really is. To enumerate the whole table of contents would be to fill half of our JOURNAL, but we will quote the heads of chapters and number of pages of reading matter upon each subject which will suffice in giving something of an idea of the general contents.

Descriptive and Surgical Anatomy of the Head, 39 pages—The Muscles of Expression and Mastication, 11 pages—Arteries and Veins of Facial Region, 19 pages—Lymphatic Vessels and Glands of the Head, 5 pages—The Facial Nerve, 3 pages—The Fifth Pair of Nerves, 16 pages—The Mouth, 13 pages—Anatomy of the Teeth, 10 pages—Dentition, 16 pages—Associate Lesions of First Dentition, 25 pages—Anomalies of Second Dentition and their Surgical Relations, 11 pages—The Teeth and their Diseases, 45 pages—Surgical Consideration of Dental Caries, 10 pages—Dental Therapeutics, 3 pages—The Oral Fluids, 8 pages—The Teeth and their Diseases, Odontalgia, 23 pages—Periodontitis, 6 pages—Alveolar Abscess, 14 pages—The Pulp Chamber and Canals, 10 pages—Discolored Teeth, 4 pages—Replantation, Transplantation and Implantation of Teeth, 15 pages—Denudation, 2 pages—Operative Dentistry, 207 pages—Prosthetic Dentistry, 95 pages—Pyorrhœa Alveolaris, 6 pages—Salivary Calculus, 9 pages—The Gums and their Diseases, 21 pages—The Aphthæ, 18 pages—Wounds of the Mouth and Associate Parts, 24 pages—The Tonsil Glands, 13 pages—Bronchotomy, 13 pages—The Tongue and its Diseases, 42 pages—The Uvula and its Diseases, 4 pages—Diseases of the Floor of the Mouth, 7 pages—Hygromata of the Neck, 5 pages—Diseases of the Pharynx, 13 pages—Palatine Defects and their Treatment by Operation, 9 pages—The Nose and its Diseases, 41 pages—Diseases of the Face, 29 pages—Lupus, 1 pages—Epithelioma, 15 pages—Operations upon the Lips and

Cheeks, 33 pages—Ligation of Arteries, 12 pages—The Antrum of Highmore and its Diseases, 20 pages—Salivary Fistulae, 5 pages—Caries of the Maxillae, 10 pages—Necrosis, 26 pages—Dislocation of the Inferior Maxilla, 5 pages—Fractures of the Maxillary Bones, 33 pages—Exsections of the Maxillary Bones, 17 pages—Anchylosis of the Jaw, 26 pages—Neuralgia, 19 pages—Nerve Lesions proper and their Treatment by Section, 15 pages—Tumors of the Mouth and Face and their Classification, 79 pages—Medical Diagnosis, 33 pages—Anæsthesia, and Anæsthetics, 67 pages—Inflammation, 21 pages—Erysipelas, 4 pages—Antisepsis, 5 pages.

The work altogether contains 1364 pages, and 961 wood-cuts and steel engravings. A thorough revision of the fourth edition has been made and alterations and additions may be noticed on almost every page. The author, to condense, has eliminated considerable of the less important material and made such alterations in the presentation of subjects as to make them easier of comprehension by a student, and, if possible, more practical. Dr. Garretson is too well known to need an introduction, and briefly stated his work is the *only* thorough treatise on this subject. The typographical work is perfect and reflects much credit upon the publishers. Those of our readers who have not already secured this book should do so for it is a work that should be in every dental and medical practitioner's library.

THE STUDENT'S MANUAL AND HAND-BOOK FOR THE DENTAL LABORATORY, by Dr. L. P. HASKELL, Prof. of Prosthetic Dentistry. Dental Department of the Northwestern University, Chicago. Second edition. Philadelphia: Wilmington Dental Mfg. Co., Publishers. 1890. Price, \$1.50.

The second edition of this popular manual has been revised, enlarged and more fully illustrated. It is just what its name implies a thoroughly practical hand-book for the dental laboratory. Dr. Haskell, as our readers know, has the faculty of expressing his thoughts concisely, and we do not know of a work of 97 pages that contains so much practical knowledge as this. We have not noticed a single sentence that is superfluous. The Angle system of Regulating and Retaining Teeth is included in the book and is thoroughly described and illustrated. To give our readers a better idea of the contents we will quote the heads of chapters: General Principles—The Laboratory—Tools and Appliances—Blow-pipe, etc.—Impressions—Plaster Casts—Dies—Swaging Plates—Fitting Plates—Clasps—Investing, Backing, Soldering—Preparation of Metals and Making Solders—Attachment of Teeth to Plates—Relative Value of the various Materials for Plates—Combination Work—Continuous-Gum—Cast Metal Plates—Vulcanized Rubber—Celluloid—Repairing—Selection and Arrangement of Teeth—Temperaments—Temporary Work—Adjustment in the Mouth—The Angle System of Regulation and Retention of Teeth—Fractures of Maxillary Bones.

DENTAL SURGERY FOR MEDICAL PRACTITIONERS AND STUDENTS OF MEDICINE, by A. W. BARRETT, M. B., (Lond.) M.R.C.S., L.D.S.E. Dental Surgeon to the London Hospital and Lecturer on Den-

tal Surgery in the Medical School. Second edition, illustrated. Philadelphia: P. Blakiston, Son & Co., 1890. Toledo, O., Brown, Eager & Co.

This is a work prepared expressly for physicians and students and contains a general description of the important subjects with which the dentist has to deal. Such matters as the insertion of gold fillings, the pivoting of crowns, etc., have been given only a passing reference as these fall only within the scope of the dental specialist. The author has aimed to give upon dental matters just so much practical information as may suffice the medical student or practitioner in the work of his profession. It is a book much needed, and if every physician could be induced to carefully peruse its contents and act accordingly, it would do much toward educating the masses in regard to the necessity for dental work. We hope the work will find ready sale.

THE ESSENTIALS OF MEDICAL CHEMISTRY AND URINALYSIS, by SAM'L E. WOODY, A.M., M.D., Prof. of Chemistry and Public Hygiene and Clinical Lecturer on Diseases of Children, in Kentucky School of Medicine. Third edition, revised, enlarged and illustrated, pp. 157. Philadelphia: P. Blakiston, Son & Co., Publishers, 1890. Toledo, O., Brown, Eager & Co.

The author of this work in the preface says: The third edition treading so closely on the heels of its predecessors, assures the writer that this little book has found use in the hands of many medical students, and that his labor has lessened theirs.

As long as the effort is made to crowd the whole science of medicine into a five month's course, the hurried student must have a book such as this to present the *essential facts*, so that he need not wade through the more exhaustive text-books, or be compelled to take voluminous notes, which are unavoidably inaccurate and unsatisfactory. The selection of material and the plan of presentation is the outgrowth of the author's experience as a general practitioner and as a teacher of medical chemistry for the past twelve years. The subjects treated are so numerous that the descriptions are necessarily brief, but the principles of the science and the application of the facts to medicine have been stated more fully.

A TEXT-BOOK OF COMPARATIVE PHYSIOLOGY *FOR STUDENTS AND PRACTITIONERS OF COMPARATIVE MEDICINE, by WESLEY MILLS, M.A., M.D., D.V.S. Professor of Physiology in the Faculty of Human Medicine and the Faculty of Comparative Medicine and Veterinary Science of McGill University, Montreal; author of a text-book of Animal Physiology, etc.: pp. 636. New York: D. Appleton & Co., Publishers. 1890.

While the work before us is intended particularly for students and practitioners of veterinary medicine, it is of value to the general medical practitioner for a knowledge of comparative physiology can but assist him in the study of the human. The author has given a short account of what has been deemed of most importance in general biology, has given a full account of reproduction and endeavored to bring before the practitioner enough of com-

parative physiology in its widest sense to impress him with the importance of recognizing that all medicine, like all science is, when at its best, comparative; and to show that the doctrines of evolution must apply to physiology and medicine as well as to morphology. In his preface the author says: "The time has certainly come when medicine must leave the narrow ruts within which it has been confined, and become essentially comparative. To hasten that consummation, so devoutly to be wished, has been the object with which this work has been written. Unless the student is infused with a broad comparative spirit in the earliest years of his studies, and guided accordingly, there is no sure guarantee of final success in the widest sense."

The book is profusely illustrated, well written, neatly printed and in every way worthy of a place in every medical practitioner's library.

CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY, promises to be a work of great value to every practitioner containing as it will the best of all the practical ideas given to the profession through the dental journals. Foreign and American, and dental literature in general during the year. The first volume will be issued early in January. It is sold only by subscription, so if you want the valuable work of Catching's Compendium of Practical Dentistry send a card to Dr. B. H. Catching, Atlanta, Ga. Subscription price \$2.50 per volume.

BOOKS RECEIVED.

IRREGULARITIES OF THE TEETH AND THEIR TREATMENT, by Eugene S. Talbot, M.D., D.D.S. Second edition. Philadelphia: P. Blakiston, Son & Co., Publishers.

A COMPEND OF DENTAL PATHOLOGY AND DENTAL MEDICINE, by George W. Warren, D.D.S. Philadelphia: P. Blakiston, Son & Co., Publishers.

Publishers' Notice.

IMPORTANT.

AS MOST of our subscribers have requested us to send THE OHIO JOURNAL to their address until forbid, we will continue sending THE JOURNAL to all unless otherwise notified. Should there be any of our subscribers who, from any cause, desire to have the JOURNAL discontinued they will do us a special favor by so notifying us.

Our subscribers should also bear in mind that it costs a great amount of money to issue a journal, and we kindly ask them to be as prompt as convenient, in remitting us the amount of subscription, which is only \$2.00.

THE OHIO JOURNAL FOR 1891.

FROM the many testimonials and compliments received, as well as the increased prosperity of the OHIO JOURNAL during the past year, we fully realize that the arrangement and character of reading matter as presented meets with universal favor. We therefore deem it best to continue the JOURNAL in the same way unless future happenings point out some change that will be still more beneficial to our readers.

We wish also to call attention of our readers to the fact that THE OHIO JOURNAL *is the only dental journal* published having a special department on Prosthetic Dentistry and Crown and Bridge-Work. By bringing before the notice of our readers each month the newest methods presented to the profession, through all sources, it makes quite an encyclopedia and a valuable book of reference. Our contributors, both American and Foreign, will continue to give the JOURNAL their best thoughts. The WHAT WE SEE AND HEAR Department will be conducted as in the past and all of the best *practical* thoughts given at societies, through other journals, dental literature in general or contributed will be presented. OUR AFTERMATH will contain items of a personal, or newsy character. The CORRESPONDENCE Department will contain letters from prominent dentists. The SOCIETY Department will keep our readers posted as to date of meetings, notice of society elections, commencements, etc. EDITORIALS will be upon current topics and such subjects as will be of interest to all. Society Proceedings will be fairly reported and in fact everything will be done to keep THE OHIO JOURNAL in the front rank of dental journalism and to give our readers that variety that is always relished.

In appreciation of the many kind words spoken for THE JOURNAL and its increased list of subscribers, we extend our hearty thanks and hope that in the future as in the past we may be able to keep up the record and give our subscribers many times the worth of their investment.

Those subscribing for the coming year before January 1st, 1891, will receive the September, October, November, and December, 1890, JOURNALS GRATIS. Subscribe through your dental dealer or through the publishers direct.

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"A word fitly spoken is like apples of gold."—SOLOMON.
—

PRESIDENT'S ADDRESS.*

—
BY W. H. SEDGWICK, D.D.S., GRANVILLE, O.
—

AGAIN, by the blessing of Divine Providence, the annual cycle has brought us together. As I come before you, to deliver this, my opening address, it is with a keen sense of inability to fulfill my desire or your expectation.

As I look back to the time when I was regularly installed in my honored father's office as a student of dentistry, I am astounded at the advances made in the profession. At that time the best mechanic was regarded as the most successful dentist, and with a few notable exceptions, the preservation of the natural teeth was a secondary object.

The expert extractor who was surgeon enough to sever the *dental ligament* which held the tooth so firmly in the socket was the successful operator. The ambition of my student life was to have a muffle furnace and carve my own blocks for gold mounting.

In my researches for "more light" in dentistry well do I remember visiting a neighboring dentist and seeing over his

* Read before the Ohio State Dental Society, held at Columbus, October, 1890.

laboratory door the warning notice, "Positively no admittance." During the life time of some who are now within the sound of my voice there were but two practicing dentists in Cincinnati, and the whole State could not claim a half dozen, while there was not one in this capital city of the State, where now blaze forth the pictorial advertisements of a number of self-styled "distinguished" dentists, "Best teeth for \$8.00; warranted." Touching upon this subject I cannot forbear quoting from Dr. J. B. Willmot as follows: "The law has its 'shysters,' medicine its 'quacks,' divinity its imposters, but it has remained for dentistry to cheapen itself and deprecate the value of its services to the public. Fancy a lawyer advertising, 'Best advice only \$9.00, poorer quality at \$5.00'; or a physician, 'Best prescription only 50c.; common ones 15c.'; or a clergyman, 'Best sermons only \$5.00 each, and if two be taken on a Sabbath no extra charge made for attending Sunday-school in the afternoon,' and yet our daily and weekly papers contain scores of this class of dental advertisements to the utter disgust of professional and intelligent men and women."

If we review the period to which I have alluded we find but little done for the advancement and elevation of our profession in the west except isolated individual efforts of a few noble men.

The "itinerant," traveling from town to town was classified as a tinker, a "tooth-carpenter," and occasionally a doctor. Thanks to the indefatigable efforts of industrious men in our ranks we have lived to see dentistry recognized as a learned and scientific profession. The *medical* profession, ever jealous of intruders, has extended to us the hand of fellowship, and welcome us as specialists to its ranks.

What has brought about this rapid change and great advancement in the history of dentistry? I answer the dental colleges, dental literature, and dental societies. It was only in 1840, fifty years ago, that the first regular dental college in the world was established in the city of Baltimore. What pluck, energy, and faith were required by a few noble men to enter upon this new enterprise? Did they, from the summit of Mount Hope, peer into the future, and from its elevated plane see every city of any pretensions supporting a dental college, and the cities and towns of the unknown west maintaining an army of educated dental practitioners? I do not intend to inflict upon you a thread bare

treatise on dental education, yet I would urge upon our colleges the importance of matriculating none but such as give evidence of a good scientific and classical education. Nothing but this higher education prepared Dr. W. D. Miller to take the elevated position in the profession which he now holds. Knowledge enlightens us as to our true condition, makes us ambitious to better it, and clothes us with those social virtues and graces so essential to true manhood; in short, makes us real men.

Let our colleges take no student that has not first had an office pupilage, and practitioners take no student who will not agree to take, at least, a two year's pupilage, and obligate himself to take a regular course of two or three terms, as the case may be, in a regular college of dentistry. To meet my idea of the true specialist, I would have our students take a regular course in a medical college. This gives character and self-confidence to the dentist, and makes him a wise and useful member of our profession, elevating our society, and adding much to our literature.

The journalistic literature of our profession was inaugurated in 1839, by the publication of *The American Journal of Dental Science*; the first periodical in the world devoted exclusively to the science of dentistry. To-day our magazines and dental journals form an encyclopædia of dental knowledge furnishing information for the inquirer in every branch of our art.

What a history is this to come within the compass of an ordinary life-time? But yesterday a few poor pretenders; to-day a bright array of accomplished, educated practitioners.

Then, gentlemen of the Ohio State Dental Society, I greet you to-day, with exultation that we have harvested our first fruits, and that the principles of our art have taken the form of a systematic science, and a literature commensurate with the importance of our honorable calling. The transition age is passed; we have reached our majority; the responsibilities and duties of the present era are upon us. I say *us*, for upon the practitioner of to-day depends the advance and attainment accomplished in the future.

I would foster and encourage our State Dental Society, and make it so interesting and instructive that no dentist could afford to absent himself from our annual meetings. So important is associated effort that now all professions, trades, and callings have their societies, unions, and fraternities. A society may be

anything in result from an honorable association to a selfish conspiracy ; accomplishing much good or doing great evil. This society may truly feel proud of what it has accomplished. Intellectually it has been of great advantage ; while to some, no doubt, it has been the first school for them to enter ; and to-day they are better men and better dentists for the existence of the Ohio State Dental Society. From a social point of view we have gained much ; new friends have been added to our list, and the good accruing therefrom has been far greater than the evil. A demand has been made for more clinics at our annual conventions, and the argument made that many learn more from seeing an operation than from reading even a minute description of the same.

I cannot too strongly urge upon you the necessity of the dental law recommended by my worthy predecessor at Cleveland last year. The conditions were not propitious for your committee, appointed a year ago, to make much progress at the session of the legislature last winter. Montebanks, quacks, and imposters are peddling their wares (rubber teeth) from house to house, criminally extracting teeth for the uninformed that should be saved to do good work for years. I would have the strong arm of the law protect the public from these destroyers and mutilators of the "human face divine." I would have the conditions so strict that no one should extract a tooth, or practice dentistry in any branch of the profession without a diploma from a reputable college of dental surgery, or a certificate from the State Board of Examiners, and said diploma or certificate recorded in the clerk's office of the county where the dentist expects to practice ; it should be a criminal offence to extract a tooth that could be saved. I would recommend a still more urgent need of district societies, which have not for various reasons, made much headway in our State, from a feeling no doubt, of jealousy or envy existing among a certain class of dentists. It seems difficult to get these dentists into harmony sufficiently to form a society, and these are the very men who need the attrition necessary to bring them up to the standard demanded of the practitioner to-day. "What the circulation of the blood is to the human system, the principle of association is to society ; it is the motive, life, and power of its organic being."

I would encourage all to take a part in the discussions and

proceedings of the meeting, and especially would I advise our younger members to participate in the deliberations of this session and not leave all the criticism, lectures, and papers to a few.

We are all pupils and all teachers here; take up some subject and give it a special investigation, and give us the benefit of your examination.

Gentlemen of the Ohio State Dental Society, do we as a profession study enough? I answer, no! Do we investigate enough? No! Do we write enough? Do we think enough? Do we read enough? Emphatically, no! I would most earnestly recommend that this society inaugurate systematic readings for dental practitioners; a post-graduate course similar to the Chautauqua literary course, such readings directed by eminent specialists in microscopy, biology, bacteriology, physiology, chemistry, etc., and the required monthly readings published in our journals could not but be interesting and instructive. Thus a school would be formed in which all were interested pupils, and a field of research opened to which all inquiries might come, and thus a National Dental College be established for all time. I cannot urge too forcibly that all take time to write for publication interesting and exceptional cases which come under your notice and experience, the modes of treatment and results, whether successful or otherwise, that others may be benefited by your researches. The dentist of to-day is but a school boy, and in the next century I predict more rapid strides will be made in dentistry than in any other profession. I look forward into the future and see a body of intellectual and educated gentlemen with a due appreciation of their high calling; I see a profession exalted by its members; a science so perfected that all things are possible to it; I see a time when the dental pulp will be capped and preserved; when the antiseptics and disinfectants will be so understood that putrid pulp canals will be scientifically treated, and alveolar abscess aborted; I see a time when oral surgery and hygiene will be referred to the dental practitioner; a time when local anæsthesia will be so perfected that dentistry will be made painless; a time when dentition will be so directed by the skilled dental practitioner that irregularities will be unknown; I see a time when the forceps will be banished from our dental cabinet; a time when our patients will be more careful and fastidious in selecting their dentist than they are in selecting their physician; I see a time

when the dentist will command a fair compensation for his work, and his bills be more promptly paid; a time when there will be no combines, trusts, or monopolies, "when all frauds, shams, and impositions shall be swept out as with the besom of destruction and their authors and promotors either converted or brought to shame and confusion."

In conclusion, gentlemen, may our present session be characterized by harmony, good feeling, and due regard to each other in debates.

"May brotherly love prevail, and every moral and social virtue cement us."

DISCUSSION.

In regard to the clause, "What has brought about this rapid change and great advancement in the history of dentistry?"

DR. H. A. SMITH said he thought the dental colleges were first to inaugurate the progress in dentistry, following this the dental journals and then came the dental society. He spoke about the organization of the first dental college and dental journal and the lives of Chapin A. Harris and James A. Taylor. He further added that as dental colleges were the starting points of this progress he thought they should be dealt with more leniently in consideration of what they had done than they seem to be by some practitioners. Whether colleges should be increased depends upon whether the Presidents remarks in regard to urging upon colleges the importance of matriculating none but such as give evidence of a good scientific and classical education, are adopted. He thought the students to-day were educated sufficiently for any requirements in life save possibly the higher professions. The standard of education among applicants is gradually rising and there seems to be no reason why it should not continue until the classical education spoken of is reached. He did not see why apprehension should be felt in regard to the requirements of applicants. The classical education will come soon enough. He thought the three year term would cut down the number of students and an immediate increase in dental colleges would probably not take place.

DR. M. H. FLETCHER thought that if a man confined himself to what he learned at college or to dental literature alone, he would get far behind the times in the practice of dentistry. Pro.

gress depends upon observation and the development of the faculties in this direction is a necessity.

DR. G. H. WILSON thought it would be well to require a general education fitting one to enter upon a classical course of the student entering the dental college. He considered digital education an important factor in studying for the dental profession.

DR. SAGE: Latin and Greek have their value for the dental student. They assist him in understanding the use of terms employed in anatomy, physiology and collateral branches. The difference between the classical schools and special schools like the dental or medical college, is that merely mental discipline is aimed at in the former. A man usually forgets in a few years all that he ever knew of Latin, Greek, and the higher mathematics; at the same time through their study he has acquired a habit of concentrating his attention, a habit of sifting, assorting, appropriating, which is of great practical value when he comes to apply himself to some special study where he needs to learn facts, methods, and so on, which he will want constantly to use in practicing his profession. As it is at present in our dental and medical schools, the student has practically the same course of lectures the second and third years as he had during the first year, this repetition being necessary because of his inability to grasp the subjects in their entirety on a single presentation. By studying he learns how to study, so that the special school seems to be under the necessity of constituting itself an elementary training school as well as a school for supplying one particular kind of knowledge.

CHLORIDE OF METHYL.*

BY L. E. CUSTER, D.D.S., DAYTON, O.

SOME three years ago Dr. B. A. R. Ottolengui suggested the ether spray as an obtundent for sensitive dentine. Although this was not the first time the ether spray was used for this purpose, it was original with him, and by the strong claims for it, succeeded in turning the attention of some in that direction which resulted in a number of new agents for obtunding sensitive dentine. Dr. Otto Arnold at a meeting of this society held two

* Read before the Ohio State Dental Society, held at Columbus, October, 1890.

years ago said he used a spray of nitrous oxide for the purpose, and was followed by Dr. G. L. Curtis who read a paper upon the same agent at the March meeting of the New York Odontological Society.

The last obtundent of this nature of any importance is chloride of methyl, which was introduced by Dr. M. L. Rhein after a number of efforts.

There has been considerable confusion regarding the action of these agents. Dr. Ottolengui was first led to use the ether spray by the idea that it would produce more thorough dehydration of the dentine than could be accomplished by alcohol and hot air, and he was successful. But let me say that this success was not the result of dehydration. 1st, because ether has no affinity for water; 2nd, because it reduces the temperature of the dentine which opposes the evaporation of its moisture. The ether spray unless inhaled obtunds sensitive dentine by no other means than the cold which it produces.

Dr. Curtis in his paper in speaking of the action of nitrous oxide, said: "Whether the action of nitrous oxide, as herein set forth, is chemical or mechanical I am as yet unable to state, but by experiments now under progress I hope to arrive at a clear solution of the question. Thus far I am led to the belief that anæsthesia is the result of dehydration." Experiments would be unnecessary if the author would read a lesson from the simple nurse girl who hangs the napkin before the fire to dry. Heat produces evaporation of moisture, not cold. Chemists say nitrous oxide has no affinity for water, but it has been observed that water takes up 80% of its volume of the gas. The cold produced by the volatilization of nitrous oxide is so intense that the water of the dentinal tubuli would be frozen before enough could evaporate to produce the profound results following the use of the powerful agent. The only manner in which I see nitrous oxide could be effective in any other way than by reduction of temperature is either by its being inhaled, or in the following manner: It is said that after the first few inhalations of nitrous oxide the lung membrane becomes anæsthetized, so the 80% absorbed by the water in the tubule might in like manner anæsthetize the fibril. But that is a rather fine point. There is no use in "chasing the devil 'round the stump," unless the agent is inhaled in sufficient quantity to produce general anæsthesia; it is cold that does the

work, and for the following reason: For the perfect performance of nerve function the normal temperature of the organism is necessary. Lowering of the temperature obtunds the sensibility somewhat proportionate to the departure from normality. The distance of the bulbous portion of the pulp from collateral circulation, there being no blood circulation in the dentine, and the ease with which the crown of the tooth may be isolated from surrounding sources of warmth, make the action of refrigerating agents the most effective obtundent of sensitive dentine we have.

Chloride of methyl resembles common ether in appearance, taste and smell, but is not so inflammable. It is produced by the action of chlorine upon marsh gas, by heating together common salt, sulphuric acid and methyl alcohol, or it is more cheaply manufactured by using the waste products of beets used in the manufacture of sugar.

This is an ether having the formula CH_3Cl . The hydrocarbon radical is very low in the series and for that reason we find it difficult at ordinary temperature to keep the methyl from passing into the gaseous form. Its boiling point is about 73° Fahrenheit, while that of ether is 96° , rhigoline 64° , and that of nitrous oxide 148° below zero. We therefore have at our command an agent which is between ether and rhigoline, which, by the warmth of the hand, volatilizes with sufficient force to form a continuous spray. It is capable of reducing the temperature to about 40° below zero which gives a range wide enough for all ordinary purposes. It has no affinity for water and when used as an obtundent for sensitive dentine it acts purely by abstracting the heat.

This medicament has another property I have found, but of which I have seen no mention, and that is as a general anæsthetic. I have had no opportunity of experimenting upon any lower animal than myself, but so far as I can ascertain it is quite as prompt and powerful as either chloroform or ether. I did not test its full capacity or I would probably not have been here. There is one thing in its favor as a general anæsthetic, however, and that is this: The theory of Dr. H. C. Wood is that chloroform causes more deaths than ether because it is not as volatile an agent; that when it is removed at the outset of alarming symptoms, that which is already in the system continues to act for some time and occasionally till syncope results; while ether,

being more volatile, when not inhaled, readily passes off. Now chloride of methyl being still more volatile than either of these, might it not be found a safer anæsthetic?

Dr. M. L. Rhein, to whom belongs the credit of introducing it to the dental profession, uses this agent for facial neuralgia and sensitive dentine, and it may also be used for freezing histological specimens, but I will give its qualities as an obtundent of sensitive dentine.

Volatilizing at ordinary temperature it requires no apparatus for generating a blast as with ether. Since it is not a solvent of caoutchouc it may be carried to the tooth through a rubber tube and its flow regulated by a thumb-screw. It produces more intense cold than ether and on that account the pain following its application is more brief and the obtunding effect of much longer duration. It, therefore, also, requires less time to obtain the same results secured by ether. It volatilizes more rapidly than ether so that all the adjoining parts are not smeared with the agent.

The objections to chloride of methyl as an obtundent to sensitive dentine are, that it is a general anæsthetic and very likely to be inhaled during the refrigerating process. It is also at the present time rather expensive. Altogether I think it is all that Dr. Rhein has claimed for it as an obtundent and is to be preferred as a cold producing agent for sensitive dentine; but the older we get and the more experience we have the better I think we can control our patients by a sort of personal magnetism, and the use of dehydrating agents such as alcohol and hot air will in nearly all cases be sufficient without resorting to such dangerous methods as the use of refrigerants.

DISCUSSION.

DR. C. R. BUTLER: In the discussion of this subject of dehydration and refrigeration of dentine, I notice in looking over the journals that there is much difference of opinion in regard to these agents used. If there is any virtue in having the dentine dry I do not see the necessity of having it wet. If the rubber-dam is adjusted and the cavity thoroughly dried out it loses a great share of that sensitiveness. If the bur is run at a good speed and the dentine stroked with it, it cuts well with less pain than otherwise and does not cause enough friction to require

moisture. But as the writer suggested, as we grow older and have better means to get along it does not seem necessary to spend a great deal of time over such a point as that. Another item referred to is the method in which ether may be employed to freeze down the dentine. The apparatus spoken of is an expensive one. Other dentists employ simple apparatus and yet the general effect on the tissues is about the same. I have found that a Waterman ideal fountain pen barrel that has an extreme fine outlet, makes an admirable applicator by opening the other end to attach a rubber tube. It is simple but effective.

DR. J. R. CALLAHAN: I have never tried chloride of methyl, but have used the nitrous oxide gas spray and tried sometimes to get control of patients by using a little alcohol which they often suppose to be chloroform. The results gained have been fairly satisfactory, but perhaps as good results would have been obtained by simply drying out the cavity. I am under the impression, however, that perhaps this chloride methyl is still better to reach the desired end.

DR. OTTO ARNOLD: I frequently put a few drops of ether or chloroform on a napkin and let patients inhale a little of these agents. They get but a very small amount, only enough to gratify the olfactory senses, but it gives the impression that you are doing something to relieve them. The impression thus made establishes a confidence from which I have received the most satisfactory results. At the International Medical Congress in Berlin this summer, I saw an apparatus exhibited by Dr. Niles, of Boston, which is the best I have seen for obtunding sensitive dentine by means of a spray. It is a small metallic instrument shaped like a chip blower with a bulb to contain alcohol. The bulbous portion is heated over a spirit flame until a spray is emitted from a small orifice at one end and the hot alcohol spray applied directly to the cavity. Combining as it does essential elements for dehydration, viz., heat and chemical affinity, we may hope for good results in its use.

DR. C. R. BUTLER: I want to offer a word of caution. Dr. Arnold says there is no possible danger from using so small an amount of chloroform. I want to refer him to cases in which disastrous results have followed chloroform administration. There are many of them recorded where the amount of chloroform given was very small. In administering chloroform myself

I have seen where, if the case had not been watched very carefully, disastrous results would have occurred. I can cite instances in general surgery where patients sank under only a few whiffs of chloroform. I do not say that these things always occur, but I know that they do sometimes occur so we must be cautious in administering this anæsthetic for it is a dangerous agent. If the patient sits down with full confidence in the operator and anæsthetic, the results are more satisfactory and there is much less liability of bad effects. Nitrous oxide was also spoken of. There have been deaths from its administration. Is it always a safe anæsthetic?

DR. OTTO ARNOLD: The point I wished to make, was to impress your patients with the fact that you are trying to do something to relieve their suffering. In the method mentioned by me you don't give enough of the agents to get anæsthesia at all. I do not desire an anæsthetic condition. I merely want my patient's confidence, which has enabled me thus far to continue every operation I have ever attempted where sensitive dentine was the only obstacle present. Besides, I have the presumption to believe that I am speaking to a body of men, who by education and experience, need not continuously be reminded of the dangerous phases of these agents.

DR. H. A. SMITH said that some years ago Dr. Hamilton advised ether administration to a certain stage termed the ether glow and from his own experience thought that the doctor was about right. He cited a case of one patient he has to whom he had administered ether in order to painlessly excavate a cavity, and since that time whenever she comes to the office for work she requests that he give her the ether as before. He stated that a certain physician said the difference between a quack and a regular was that the quack put his patients to sleep. So in dentistry the quack seems to get on the best. Now why this difference? They inject a something hypodermically into the tissues making their operations painless. Whether it is because they are more courageous, or whether "fools rush in where angels fear to tread" he could not state, but there certainly was a something that assisted them in obtaining the painless results. He had seen this apparatus of Dr. M. L. Rhein's and was much pleased with its workings. He was informed that the apparatus complete, with attachments to carry the spray to the cavity, could be pur-

chased for \$27.50. This he gave for the benefit of those present who wished to experiment with or use this agent.

DR. BOLLINGER said that he believed Drs. Custer and Arnold had struck the key note in what Dr. Custer called hypnotism and Dr. Arnold gave no particular name. In his experience he had found the working on the mind of the greatest help to him. He found it more trouble to control the patient's fears than the sensitive dentine.

DR. C. P. DENNIS advised caution in the use of these sprays as there was a great liability of producing the death of the tooth pulp if they were too long continued.

DR. J. TAFT said that in using any of these agents for dehydration, refrigeration, etc., the rubber-dam should always be applied. It should be clearly borne in mind that the effectiveness of the obtunding depends upon two things: first, dehydration; and second, reduction of temperature. Every one is perhaps already aware that absolute dryness destroys sensibility in the part. The time required to accomplish this, however, varies in different cases. Take for instance a tooth of dense structure and dehydration is more easily and quickly accomplished than where the structure is less dense. Benumbing with cold also varies and it will be found more effective in some cases than it is in others; probably due to certain nerve conditions and relations. These different conditions should always be taken into account. He had not used chloride of methyl personally but had seen it used, and did not think any better results were obtained than by the use of alcohol and other volatile agents.

DR. F. W. SAGE in answer to Dr. Butler's remark concerning deaths from the administration of nitrous oxide gas, said that there were, in all that has been administered, only eleven deaths reported and only eight authenticated cases.

INTIMATE DIAGNOSIS OF LESIONS AFFECTING
THE TEETH.*

BY F. W. SAGE, D.D.S., CINCINNATI, O.

PERHAPS in no single respect is the difference between the theory and the practice of medical science so strikingly set forth as by the perplexities which oftentimes beset the practitioner when he undertakes a diagnosis. The questions which at the outset confront him: What is the matter? where is the exact seat of the trouble? what are the complications? loom up formidably, overshadowing the lesser considerations of the means to be employed for relief. To such a degree is the faculty of insight into the cause and nature of disease superior to every and all other faculties requisite to the successful practice of medicine, that it may be termed the genius of medical instinct towering above the cultured attainments of mere talent. It is the something wittily suggested as a prerequisite, in the familiar recipe for dressing a hare, "first catch your hare," the wit of this obviously superfluous admonition inhering in the acknowledged difficulty of accomplishing that feat, and being supplemented by the intimation that it is one matter to know how to do a thing, and another matter, still more important, to supply all requisite conditions for doing it.

The science of diagnosis unlike the science of therapeutics or of prophylactics, cannot be reduced to the plane of exactness, because it involves so much that is intangible, indefinable, and irrelevant, that we never really know when we have reached the extreme limits of inquiry. We may, in the midst of our cautious gropings, arrive at data which justify us in excluding from all further consideration, this, that, and the other thing, which at first we surmised might be involved in the apparent complications, and yet be far from a solution of the problem we are seeking to resolve. Aside from the question of probable causes, and behind and beyond the question of idiosyncrasies, lies a vast, unexplored field of contingent causes into which field we may be called to enter, with no guides for our uncertain footsteps

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other than those which are afforded by the elementary charts which speculation supplies. Nay, more, we may even here be led into error and pursue misleading paths through innocent misrepresentations of those whose relief we have most at heart; and so, through following false guides, find ourselves hopelessly involved without being able to determine the point at which the digression was made. What wonder is it then that with all the resources of therapeutical science at his command the physician often fails? What wonder is it, that in the midst of variations of symptoms occurring from time to time, no two of half a dozen practitioners are found exactly to agree in their opinions as to what ails the patient? What wonder is it, finally, that the peculiar instinct which by some is esteemed a divine gift—the faculty of quickly determining what is the cause, nature, and location of the disease—should be regarded as marking its possessor as preëminent among his colleagues?

The science of diagnosis in its application to the dental branch of medical science is only less important than diagnosis in general, in the consequences involved in its right or wrong application. The issues of life and death are perhaps seldom involved in the cases which come under the dentist's attention, and failure to understand the nature of the case or to relieve the symptoms, after all brings to the mortified dentist no apprehension of resultant distresses such as Nature cannot ultimately relieve. And that is equivalent to saying that the dentist, like the physician, must often content himself with a tentative course of treatment. He may feel reasonably well assured that a capped pulp is the cause of neuralgic facial pain, and yet through failure to get a response to approved tests, he may consider it expedient to await later developments. This brings us, first of all, to consider a class of difficulties which confront dentist and physician alike; difficulties arising from ignorance, or insufficient knowledge on his part, of what has been done by another who may have had the case in charge. Were time and opportunity always at his command, the dentist who fails to find a way might make it. The patient objects to the experimental removal of a large filling, preferring to take the chances of the dentist being wrong in his speculations. Or he thinks he can better endure present pain than the possible infliction of worse. Upon him then rests the responsibility which the dentist is often quite willing to escape.

The matter of diagnosis in obscure dental lesions is, first of all, a matter of excluding such symptoms as manifestly have no relation to the case. The statements of the patient may or may not aid us; quite as often as otherwise they possess no significance whatever unless they be drawn out from him by leading questions. To get a correct history of the case is not always a simple matter; the patient through fear of an operation which he foresees or imagines he foresees, suppresses some fact of importance, or perhaps conscious of some negligent or imprudent act of his own, which being confessed would subject him to censure, withholds statements of importance; or again, through feeling of resentment toward yourself or some other dentist whom he judges blame-worthy on account of his present sufferings, even unconsciously exaggerates his symptoms, rather enjoying your perplexity, if he may but succeed in impressing upon you a due sense of your remissness and a due appreciation of his suffering. What, then, with the querulousness of age, the officiousness of youth, and the innocent ignorance of childhood and infancy, the dentist is liable to be misled in his first approaches to a diagnosis.

But having escaped from, or successfully penetrated all these snares, the next question is, what really are the symptoms? Our inquiries thus far have been made with an intelligent regard for the ignorance, prejudices and foibles of our patient, so that we know approximately how much to believe and how much to set aside of his statements. First of all, in every instance where the object is to discover the source of pain, we have learned to be mindful of that most common and ever-to-be-suspected phenomenon, reflex nervous irritation. Ask the patient to indicate the aching tooth, and three times out of five he will direct you wrong. Here, then, we must set our general knowledge, acquired by observation and experience, against his most earnest asseverations, and especially after the failure of the usual tests, must reject his opinion in favor of the indications of precedents drawn from our own more extended knowledge of similar cases.

Intimate diagnosis presupposes care and self-watchfulness that we be not unconsciously led into error through our preconceptions. A patient comes in complaining of facial neuralgia. Instantly the dentist's thoughts revert to some occasion, weeks or months before, when with misgivings he capped a pulp for this complainant. Before inviting him to a seat in his chair he

has already decided to remove that capping. Such instances of prejudgment based on nothing more tangible than fears of an unfavorable outcome, are by no means rare. Perhaps the dentist invites confirmation of his own false assumption by some remark which gives the patient to understand that he had rather expected trouble with a particular tooth, and is in consequence doubly surprised when he discovers his error. Most important is it then, in all cases, that the dentist admonish himself, first of all, to beware of plausible anticipations, to guard himself against the inferences of mere probability, while at the same time fully recognizing their value so far and *only* so far as they suggest means for intelligent inquiry. He must ever be on the alert for exceptions to the usual rule, for those occasional coincidences which mislead all but the most wide-awake investigators. Perhaps my meaning will be more clearly set forth by a citation of instances in my own office practice.

Miss B., accompanied by her physician, presented herself at my office, suffering from ankylosis of the jaw, the result, as it appeared, of an impacted wisdom tooth. A fistula from which pus exuded, under the inferior maxilla, was attributed, by her medical advisor, to necrosis. It was at the patient's solicitation that I was consulted, as I had filled several teeth for her about four years before. Dr. ———, the physician having the case in charge, had treated her ineffectually for about two months, hoping to close the fistula by the use of injections. The ankylosis coming on gradually had reduced the case to a condition so serious as to demand immediate relief, and as the first thing indicated was the extraction of the wisdom tooth, we proceeded with the aid of pine wedges to gain space for that purpose, closure of the jaws to within about half an inch, having already taken place. Meanwhile it had occurred to the writer as highly improbable that the fistula proceeded from necrosis at all, or indeed that it had any connection at all with the wisdom tooth, the roots of which, if not actually curved backwards towards the ramus of the jaw, must have been directed backwards as indicated by the position of the tooth lying with its antero-mesial surface towards the distal surface of the second molar. Several considerations were against the hypothesis of necrosis: first, the single fistula, where necrosis usually exhibits several; second, the probability that the fistula—granting the possibility of its having

resulted from alveolar necrosis—would have presented itself on the gum near the tooth, or even have burrowed between the fasciæ and found a more convenient outlet at some point on the neck, or even upon the shoulder or arm; third, the density of the bone in the immediate vicinity of the dens sapientia precluding the idea of the pus having burrowed downward and forward to find an outlet directly under the second molar. Seeking confirmation of a suspicion that the second molar was directly implicated, a probe was passed upward from the outside far enough to determine approximately that communication might be made with an abscess associated with the posterior root of the second molar. Following this clew tests were made by tapping, applying heat and cold, etc., to the suspected tooth without the usual response expected, however. The patient declared that hot gutta-percha applied to a gold filling in the crown of this tooth hurt her, at the same time professing no unpleasant or painful sensations when we tapped upon the tooth with a heavy steel instrument. In view of indications already detailed, we chose to ignore these protestations, taking account also of the patient's being extremely nervous and anxious at the time. The next step was to remove the filling in this second molar tooth, which was found to occupy a fissure cavity hardly a line in depth. At this stage we might have desisted from further search for the dead pulp, there being nothing to suggest its possible exposure at the time of inserting the filling. Determined, however, to pursue the investigation to the very extreme, a very fine probe was employed which was presently made to pass into a minute opening from which pus at once exuded, and we found our suspicions confirmed. Having extracted the tooth we discovered one of those exceptional cases of "elongated" *cornu*, as Garretson terms it, the horns of the pulp being nearly exposed at two other points barely below the enamel line. The patient recovered without further serious inconvenience.

This case illustrates the importance of avoiding such complications as may possibly arise from knowing only half the truth in the outset. Had the wisdom tooth been extracted in this instance, presuming, as is probable, that the anchylosis would have been relieved, the very success of the operation might have entered in as an element to obscure later unfavorable features of the case, so that there is no predicting how much burrowing and

chipping away of bone in the suspected socket might have been undertaken to remove necrosed bone where none existed; how much probing and cauterizing of a fistula that had no relation whatever to the wisdom tooth or the ankylosis might have been employed to torture the despairing victim. To be sure all these contingent sequelæ would have been in fact avoided, in this instance, through an accident—the accident of our having decided at all events to extract the second molar. Through that accident might have been revealed the superfluousness of extracting the wisdom tooth also, had no sufficient explanation of the existence of the fistula been before discovered. But through the actual discovery the patient was spared that infliction.

Another element coming in occasionally to frustrate our efforts at a complete diagnosis, is born of coincidences. One instance will suffice to illustrate our meaning. A patient applied to the writer recently complaining of an abscessed tooth, the gum and all of the adjacent parts being involved in severe inflammation. He stated that he had consulted another dentist three days before, who had opened into the root of the affected tooth—an upper second bicuspid—and once at the time, and again the following day had cleansed and disinfected the root with special care, affording him relief as he at the time thought, although he admitted when we saw him that he had passed his third night of agony. He said that his dentist had confidently predicted absolute relief, his surprise and chagrin being equaled only by the patient's disappointment on the failure of that prediction. Careful examination disclosed the fact that the treatment of his dentist had been after the usual, approved manner, the dressing in the root being free from pus, sweet and dry, so that to all appearances the root was ready for filling. No soreness appeared upon percussion. Suspecting some complication the same test—percussion—was tried upon other teeth situated within the field of the swelling and inflammation, revealing not one only, but two other teeth with dead pulps—the canine and the lateral incisor. These having been drilled into pus welled out copiously, giving almost immediate relief. A cure followed their treatment in a very short time.

The idea of excluding certain teeth suspected, through various improvised devices, in order to narrow the field of disturbance and afford greater certainty in forming our diagnosis, has

sometimes been advantageously employed by the writer. A lady presented herself complaining of pain in a lower bicuspid or molar, which, she was unable to decide. The former had suffered from erosion to the extent of having the enamel largely wasted away, while the gum had receded considerably. The molar had a large cavity in the distal surface, decay having been arrested by a process of eburnation, so that it was not at once practicable to determine whether or not the pulp was alive. Over the bicuspid a piece of French tubing was sprung, the crown being then covered with gutta-percha, so that the tooth was probably perfectly protected from moisture and from thermal impressions. The cavity in the molar was filled with gutta-percha. In this condition both remained for about a week, no further pain resulting. Finally the bicuspid was covered with a ferrule and cap, and the cavity in the molar permanently filled, both operations being successful. The conclusion at which the writer arrived, as a result of this experiment, was that the bicuspid was the offending organ, since had it been the molar, filling even with so excellent a non-conductor as gutta-percha, would hardly have availed had the pulp actually been even slightly inflamed. Be that as it may, had the disturbance continued after our having filled the molar, and presuming that nothing had been done to the bicuspid, we might have been still as far as ever from knowing where the trouble lay. The alternative in that event would have been, probably, to destroy the molar's pulp, and the sequel to that might still have been the certain discovery that the bicuspid was the source of the offense, showing that the destruction of the pulp in the molar was superfluous. By this simple device we saved our patient pain and ourself the reproach of empirical practice.

The importance of guarding against uncertain conclusions in the midst of distractions, is often illustrated by the discovery that through disregard of reflex disturbances we have located pain in an unoffending organ. Teeth, the roots of which have been filled years before, are often indicated by the patient as the seat of pain, which the sequel finally shows proceeded from a remote source, often indeed from the inflamed pulp of a tooth in the opposite jaw. Here again, through inability to determine whether or not a root contains a filling—if the patient has been in other hands—the dentist needs to be carefully guarded in

forming an opinion. The earnest protestations of the patient will need to be disregarded, if the tooth indicated fails to respond to approved tests. I have had patients insist that they plainly felt a swelling at the apex of such teeth where none was noticeable, and have found repeatedly that such complaints ceased, perhaps after treatment of an exposed pulp in a tooth in the opposite jaw. By what perverse freak it is that pain so commonly leaves an offending organ and locates itself in another, once diseased, we cannot tell; we know only the general principle that a part having once been the seat of disease is liable to be at times affected falsely in just this way.

My own practice during the past winter (1889) has been unusually prolific of what is popularly termed colds in the teeth, a term properly enough applied as signifying a disposition in teeth known to be sound to ache more or less severely after exposure to cold. I have also noticed a far more than usual number of cases of neuralgia, of a character that subjects the teeth to suspicion, when in reality they are only incidentally implicated, the affection being of a general character requiring the attendance of the physician rather than of the dentist.

The length of this paper suggests the propriety of leaving for another occasion the consideration of more serious lesions than such as we have named, and which come under the dentist's observation as presenting phases of at least equal interest.

DISCUSSION.

DR. OTTO ARNOLD said, in his experience, he had had a number of cases with remote manifestations in which he had found it difficult to determine the exciting cause. He said he went to see a lady patient who was sick in bed and supposed to be afflicted with diphtheria. He had told the attending physician that possibly some tooth affection might be instrumental in causing the trouble, and at the physician's request had visited the patient. He found a wisdom tooth erupting, tissues very much inflamed and swollen, the inflammation extending well back into the pharynx. The wisdom tooth was removed and the patient made a speedy recovery. Another case, he said, was that of a young lady who had been under the care of several dentists and physicians without relief, for the treatment of a fistula opening under the left inferior bicuspids, and who was finally sent to a surgeon

of this city to be operated upon for necrosis of the maxillary bone. The latter sought my council in the case, and I found the following conditions present: The first and second inferior molars of the afflicted side were absent: we learned that they had been removed to remedy the evil but without effect. In the space formerly occupied by these teeth the tissue was firm and healthy. The third molar was fully erupted, free from caries and to all appearances healthy, likewise the tissues immediately adjacent. The history of the beginning of her dental trouble dated, however, from the time the third molar made its appearance, and this fact was the only history of value in the case as afterward proven. In probing the sinus we could not trace its course beyond the bone directly over the opening. All of the remaining teeth were good and the entire oral cavity appeared normal. The third molar had no occluding tooth above, so I concluded to extract it and did. Upon examining the roots we found extensive congestion of the pericementum and considerable loss of structure from absorption. The patient was then sent to a hospital to await developments, and in two weeks without further treatment the fistula had disappeared and the patient was discharged.

DR. M. H. FLETCHER cited a case where the patient had pain in the side of the face. A surgeon had at four different times taken out pieces of bone as he thought necrosis was the cause of the trouble. It was found subsequently that the pulps of the teeth in that jaw and on that side of the face were all more or less effected their surfaces showing zones of infiltration or signs of having been inflamed, this we took to be the exciting cause. It is very difficult many times to make a correct diagnosis where these pulp-stones are the cause of the trouble, or where there is periosteal trouble. These are the cases that tax us as professional men. Any dentist can make and insert an artificial plate or fill a tooth, but to correctly diagnose and treat these obscure cases requires great tact and skill.

DR. HENRY BARNES said he had a lady patient now about 25 years of age who at the age of 21 years was delivered of a seven months foetus, after which puerperal fever set in and the parotid glands became so swollen as to lead the physicians to believe blood poisoning present. She recovered and when able presented herself at my office for examination of the teeth. Upon looking

at her mouth I immediately said, I know what was the cause of your trouble, you were erupting your wisdom teeth, and so it proved. Two years later she was delivered of a child at full term and again had puerperal fever but no swelling of the glands the teeth having fully erupted.

Another case was that of a lady who had had a fistulous opening on the gum for eighteen years. A prominent New York surgeon had operated to find if possible the cause of trouble, but found nothing. Eight weeks after this I saw her and on probing found an impacted second molar occupying the space above the third molar. The cause being removed a cure soon followed. He cited another case where the attending physician had been treating a patient eighteen months for "blood" disease, but which proved to be only a suppurating lower molar tooth.

DR. C. R. BUTLER spoke of a case where the patient was suffering from a number of supposititious carbuncles about the neck. He had some discomfort in his teeth, went to a dentist, not obtaining any relief. He went to a physician who could not define the cause of the trouble. The patient not being satisfied consulted another dentist who found three teeth with dead pulps; when they were opened up and thoroughly cleaned the other trouble soon disappeared.

"YOUR OLD MEN SHALL DREAM DREAMS, AND
YOUR YOUNG MEN SHALL SEE VISIONS." *

BY N. S. HOFF, D.D.S., ANN ARBOR, MICH.

IN the January number of the *Dental Review* appeared a vision, given to one of our younger men, of the conditions under which dental science and its professional practice will continue to alleviate the sufferings and enlighten the conscience of mankind, ten years hence. Dental education, journalism, commercial relations, patent laws, etc., will all undergo a process of change that shall bring them into more harmonious relations.

Another dreamer, a member of the Southern Dental Association, fancies a permanent home for that association, located on the top of one of the high mountains of Georgia, Tennessee, or

* Read before the Ohio State Dental Society, held at Columbus, October, 1890.

North Carolina, where the pure air will prove an alluring invitation to the weary practitioner, and where he may go and lay aside the vexations and burdens of his daily avocation to enjoy, not only the pure air and wholesome food, but can have the privilege of pursuing any scientific investigation dear to his heart, with the aid of a complete library, museum, and experimental laboratory.

At the last meeting of the American Dental Association, the president of the association, and the chairman of the section on Dental Education, also related visions of a uniform dental law regulating the practice of dentistry in all States, the establishment at Washington of a dental museum and library, and the organization of a national university with power to confer a special degree for superior scientific attainment.

Then there is the dream that so constantly and tenaciously occupies the great mind of our vigorous and emphatic western friend, who is looking forward anxiously to the time when he shall free the dental profession of all avaricious patent-right speculators; and after buying all legitimate patents, hold them for the use of members of the Dental Protective Association.

But the latest and one of the best comes from the east, in the announcement that a prominent member of the profession in New York city has generously offered to contribute five thousand dollars toward the establishment of a dental club. Not as a convenient place for idling away precious time over a game table, or in idle conversation with its usual pernicious accompaniment; but this idea contemplates a commodious building with apartments containing a dental museum, library, and laboratory fully equipped for carrying on investigations in all kinds of scientific work that has a bearing on dental practice. The plan also contemplates rooms for holding meetings of dental societies and for giving clinics.

The consummation of this design will give a greater stimulus to the tendency and hope of dentists to become truly scientific men, and to place their profession on a scientific basis, than all the discussions ever held on the subject of dental education.

But speaking of dreams, let me outline another, not the result of a stomach overloaded with indigestible sweet-meats, but probably traceable to the above outlined visions of the wise men of the east, south, and west.

If it is good for New York, Atlanta, and Washington to provide homes for their respective society gatherings and places for professional culture, why should not the great State of Ohio with its wealth of men and brains have a place of assembly at some central and accessible point providing facilities and accommodations of library, museum and laboratory for advanced work in all branches of professional attainment? No argument need be made to illustrate the benefit of such a provision, and none is necessary to demonstrate conclusively the demand for such an institution, certainly not to those that are connected with dental colleges where almost every mail brings a letter of inquiry from some practitioner as to the facilities afforded for post-graduate work in various lines of scientific investigation.

Now that the Ohio State Society has returned to Columbus for another meeting is it not a fitting time and place to discuss this subject and determine whether some plan cannot be devised which shall accomplish this object. Would not the city of Columbus with its central location, its capital and city advantages, furnish an acceptable place for locating a permanent home of this character for the State Society? If there is no Bödecker in Ohio to inaugurate this enterprise, there is nothing to prevent the organization of local societies in every county or large city (with the idea of increasing the membership of the State Society by making each local society auxilliary to it), and extending to the members of such societies all the privileges of the State Society, including the use of library and laboratories, the State Society exacting a *per capita* assessment from all such societies to be used in supporting and carrying on its work. If it is impracticable to purchase property and erect a suitable building, the collection of the library and museum could be commenced at once and a building fund could be started. In the mean time such a building or rooms as are needed could be rented and the work practically organized. If this were done and a competent man to put in charge could be found, who would be willing to undertake the work at a small salary and devote his entire time and energy to the organization of local or auxilliary societies; collecting and tabulating their work and publishing the same in a journal conducted by the society; assisting and counseling post-graduate students and original investigators; arranging with specialists for courses of lectures at stated intervals to classes of post-graduate

students; collecting and classifying the museum and library and making it available for investigators; and with the assistance of a committee appointed for the purpose a program could be made out embracing suitable work to be done by each auxilliary society, and once each year the whole compiled into a report to be read and discussed at the annual meeting taking the place of the heterogenous programs usually presented at society meetings. If this were done the profession in one State at least would be doing for its members a work that would bring great honor to it, and the latent talent now peacefully reposing in its members would be aroused and Ohio would produce more Atkinsons and Millers. There is no great difficulty in inaugurating some such plan on the plea of expense. The fee from post-graduate students would pay the rent of the rooms and assist in furnishing them, and there are certainly 1000 or 1500 dentists in and out of the State that would subscribe to a good live dental journal, where they know that all its profits go to the support of such an institution and this with the annual dues of members would furnish all needed income. There are fragments here and there in the libraries and closets of dental practitioners that would soon find their way into the State library and museum. By such an undertaking the society would commend itself to the consideration of professional millionaires and gifts of money would fall to it and possibly some recognition would be taken by the State government of a substantial character. And so by gradual accumulation the rolling stone would gather sufficient moss for the erection of a substantial habitation.

HYPNOTISM.*

BY J. R. CALLAHAN, D.D.S., CINCINNATI, O.

ONE can scarcely read a daily newspaper now days without seeing article after article devoted to hypnotism, wonderful, and at the same time, ridiculous, are many of the statements made, all seeming to try to establish the idea that there are persons possessed of some wonderful or divine power over their fellow men. All this confusion is the result of the unfortunate birth of this

* Read before the Ohio State Dental Society, held at Columbus, October, 1890.

phenomenon. It fell into the hands of men who were neither capable nor inclined to give it that careful and scientific examination that it deserved.

The terms animal magnetism, mesmerism, clairvoyance, and hypnotism, have been used to designate nervous conditions in which the body and mind of an individual were supposed to be influenced by a mysterious force emanating from another person. With the exception of mesmerism, a name given to the phenomena in honor of one of the earliest investigators, F. A. Mesmer, each of those items implies a theory. The phenomena of animal magnetism were supposed to be due to some kind of magnetic force or influence peculiar to living beings and analogous to the action of a magnet upon steel or other metals.

Clairvoyance implied a power of mental vision or of mental hearing or of a mental production of other sensations by which the individual became aware of events happening in another part of the world from where he was, or could tell of the existence of objects which could not affect at the time any of his bodily senses.

Hypnotism was a name applied to a condition artificially produced, in which the person was apparently asleep, and yet acted in obedience to the will of the operator as regards both motion and sensation.

The power to influence the bodies and minds of others has always attracted much attention and has been sought after for many purposes. We find that, whilst not a few have investigated these phenomena in a scientific spirit, more have done so as quacks and charlatans who have thrown discredit on a subject of deepest interest. Recently physiologists and physicians have set about such investigations of the subject as to bring it down into the domain of exact science, and to dispel the idea that the phenomena are due either to any occult force or to supernatural agency. It seems to have been the belief in all ages that the touch or lying on of hands of certain persons had a healing effect. This power was supposed, for a long time, was lodged in priests, and therefore was supernatural and connected with religion.

Frederick Anton Mesmer was born May 23, 1733. He studied medicine at Vienna, took a degree and began practice. Interested in astrology he imagined that the stars exerted an influence on beings living on earth. He identified the supposed force first with electricity and then with magnetism. He began

treating disease by stroking the body with a magnet; in 1766 he observed a priest that produced the same effect without the magnets by manipulation alone. This led Mesmer to discard the magnets and to suppose that some occult force resided in himself. He moved to Paris in 1778, he soon attracted great attention by the effects of mesmerism. Appreciating the effects of mysterious surroundings, he had his consulting apartments dimly lighted and hung with mirrors, strains of soft music occasionally broke the silence, odors were wafted through the room and the patients sat around a kind of vat in which various chemical ingredients were concocted or simmered over the fire. Holding each other's hands, the patients sat in expectancy. Then Mesmer clothed as a magician, glided amongst them, affecting this one by a touch, another by a look, by making passes, etc., etc. He finally fell into discredit and left Paris, and died in 1815.

The use of such methods as Mesmer's were and are used upon the theory that the operator possesses some supernatural power, or that some invisible fluid or influence is given off by the operator that overcomes the patient. The charlatans who travel about the country giving exhibitions usually use some such method, oftentimes adding mysterious gestures and actions to add to the mystery, all of which only proves either ignorance or a desire to deceive.

Dr. H. Bernheim, professor in the faculty of medicine at Nancy, who has given us one of the best works extant on this subject, under the title of suggestive therapeutics, says: That the whole explanation lies in suggestion, that is, in the influence exerted by an idea which has been suggested to and received by the mind. I will give Dr. Bernheim's methods of hypnotizing as briefly as possible. He says: I begin by saying to the patient that I believe benefit is to be derived from the use of hypnotism, that it is possible to cure or relieve him, that there is nothing hurtful or strange about it, that it is an ordinary sleep or torpor which can be induced in every one, and that this quiet, beneficial condition restores the equilibrium of the nervous system, etc. If necessary I hypnotize one or two subjects in his presence in order to show him that there is nothing painful in this condition and that it is not accompanied with any unusual sensation. When I have thus banished from his mind the idea of magnetism and the somewhat mysterious fear that attaches to that unknown con-

dition, above all, when he has seen patients cured or benefited by the means in question, he is no longer suspicious, but gives himself up; then I say, look at me and think of nothing but sleep, your eyelids begin to feel heavy, your eyes tired, they are getting moist, you cannot see distinctly, they are closed. Some patients close their eyes and are asleep immediately. With others I have to repeat, lay more stress on what I say and even make gestures, it makes little difference what sort of gesture is made. I persuade him to fix his eyes on mine, endeavoring at the same time to concentrate his mind on the idea of sleep. I say, your lids are closing, you cannot open them again, your arms feel heavy so do your legs, you cannot feel anything, you see nothing, you are going to sleep, and I add in a commanding tone, sleep; this word often turns the balance. I use the word sleep in order to obtain as far as possible over the patients a suggestive influence which shall bring about sleep or a state closely approaching it, for sleep, properly so-called, does not always occur. Finally, after the eyes close I keep repeating the suggestion, your lids are stuck together, you cannot open them, the need of sleep becomes greater and greater, you can no longer resist. I lower my voice gradually, repeating the command, sleep, and it is very seldom that more than three minutes pass before sleep or some degree of hypnotic influence is obtained. It is sleep by suggestion, a type of sleep which I insinuate into the brain.

This brief extract from Dr. Brenheim's method does not cover all cases, not by any means. I give this much of this modern method to show that the mask of hypocrisy and pretension has been taken from this phenomena and, that hypnotism is being practiced upon an apparently sound basis, and is no longer one of the curiosities of science.

The condition of the patient under the influence of hypnotism is seemingly normal, in some cases there is an acceleration of the cardiac and respiratory movements, this, however, can be accounted for from the fact that the patient is always more or less excited when they submit to an operation of any kind for the first time. In patients who have been hypnotized a number of times, the action of the heart and lungs remains natural according to the best authorities.

As to who, and what per cent. of people can be brought under this influence. M. Siebault gives us the best statistics. In

1880 he hypnotized 1012 persons. From his figures it appears that the proportions of subjects that can be hypnotized are about the same in men as in women, viz., 18.8 per cent. in men, 19.4 per cent. in women. A striking point in this table is the great proportion of subjects in children and youths of the ages from 1 to 7 years 26.5 per cent.; of the ages from 8 to 14 years, 55.3 per cent. were successfully hypnotized. In old age the number decreases, but always remains at the relatively high figure of 7 to 11 per cent.

Of what practical benefit is this phenomena is a question that I cannot answer in one short paper even if I possessed the knowledge to do so. It has been used successfully in many cases of organic diseases of the nervous system, hysterical diseases, neuropathic affections, rheumatic affections, etc.

Its application to dentistry has so far been very limited, because it has been the aim of dentists to produce an entire insensibility to pain. This has been done only in a small per cent. of cases. It has been almost impossible to bring a patient to the anæsthetic condition while he has the idea of an operation before him. Along with the many failures in this respect we have many very successful surgical operations reported where hypnosis was the only anæsthetic employed. Among others, Drs. Reibold and Kiario, dentists, as far back as 1847, removed a tumor of the jaw, painlessly, while the patient was under hypnotic influence, but as said before hypnotizing generally fails with persons disturbed by the expectation of an operation.

In my opinion careful investigation on the part of the dental profession would soon develop methods that would prove highly beneficial, but who is going to undertake such a work in the face of such strong public prejudice as exists to-day in regard to this subject? it amounts to superstition. If a dentist was known to be a professional hypnotist the public would at once put him down as a fanatic, a crank, a spiritualist, an infidel, and all that follows in that line. So a man who cares for his reputation has to keep rather quiet on such a subject. Then, too, there are dangers connected with the unskillful and dishonest use of this phenomena. After having been hypnotized a certain number of times, some subjects preserve a disposition to go to sleep spontaneously at most inconvenient times, others are too easily susceptible to hypnotization when they have been too often subject-

ed to it. Such susceptibility is a real danger. This unpleasant tendency can and should be controlled by the skillful and sincere operator by suggestion.

An ordinary office practice is too limited a field, and in other ways an objectionable field in which to carry on the investigation of the subject. The large clinics at our dental colleges would be the proper place for such work.

May I express the hope that soon we may have some reliable information on this point from the source indicated?

Prosthetic Dentistry.

[This department will be devoted exclusively to Prosthetic Dentistry, including Crown and Bridge-Work. We shall be pleased to receive from our readers such practical contributions, short items or queries upon this subject as they choose to contribute.]

THE "CHASE COMBINATION PLATE."

BY PROF. L. P. HASKELL, CHICAGO.

MANY do not know just what this method is, and as it is really a valuable one I wish to call attention to it. Dr. Chase, of Vermont, several years ago devised a method of combining a *metal palate* with rubber covering the alveolar border. The method is a simple one, involving much less trouble in swaging than an all metal plate. The attachment of the rubber to the plate is unique, no loops, no holes, or necessity for soldering, and yet making the strongest attachment possible.

Its advantages are that it enables the patient, who cannot afford an all gold plate, to have at least a gold palate, which is a great advantage; at the same time it enables the dentist to secure better remuneration than for rubber plates. Another advantage is that in case of absorption the rubber can be replaced without altering the metal part. In fact the *temporary* set can be made in this way, and at the proper time the case be altered over. Then it is a very simple thing to do to swage just the palatal portion of a plate.

Dr. A. S. Billings, of Omaha, owns the patent and is now doing a veritable *missionary* work introducing this method as he

goes from town to town and demonstrates to the dentist, who, perhaps, never made a die, how simple a thing it is, using as he does Babbitt metal and oiled sand. He has done another good thing in putting on the market a splendid article of sand oiled and ready for use in two and three quart cans; also a fine Babbitt metal from my formula.

It is unfortunate that he cannot multiply himself a hundred times so as to spread all over the land and visit all dentists.

MR. EDITOR:—Permit me to answer Dr. Haskell on his remarks on page 531 of your JOURNAL. I have used Babbitt's metal from its first introduction, obtained from Babbitt's London house, who made it before it was sent here to America and have some still on hand. It does not supersede zinc, having the tendency to crystallize on its entire surface; and while it is exceedingly rigid it will not stand the pressure that zinc will, as it can be hammered out of shape as easily as tin.

Yours respectfully,

D. GENESE.

LABORATORY HINTS.

Plaster Casts.—Have the following articles on your bench ready for use: 1st. SOAP VARNISH, made by dissolving English white Castile soap in soft water to the consistency of milk.

2d. DREDGE CUP. Take a half-pound baking powder can, and have your tinner make a cover for it, having the entire top part made of strainer wire, such as is used on milk pails. Keep this cup always filled with fine, strong plaster.

3d. BOTTLE OF MIXING SOLUTION. Consisting of soft water and two per cent. of alum, or borax, or sulphate of potash.

4th. PEPPER-BOX, filled with fine, powdered soap stone, and a jeweler's extra soft bench-brush.

We will suppose you have a perfect impression for full mouth. Coat the impression with soap varnish, brushing it in thoroughly till a good lather forms; now rinse off with cold water and it is ready to pour. Next pour in your bowl the right quantity of mixing solution, then add the plaster, shaking it in carefully from the dredge cup till it comes a little above the surface of the solution; stir a little. If not thick enough, shake

in more plaster, for to have a good, smooth, hard model it should be worked as thick as possible, and it can be worked very thick as the solution used causes it to set slowly. Now fill the impression slowly, tapping the bottom of the cup to make the plaster settle and drive all air to the surface. When the model is hard enough, separate it from the impression and let it stand to dry. Shake the soap-stone over it thickly and polish with the jeweler's brush till perfectly smooth. A model made thus, and then before packing, covered with the tin-foil, or liquid-tin, gives a plate as smooth as when vulcanized on solid metal cast.

Soft Rubber Cones and Wheels.—We all know that soft rubber, in the shape of wheels and cones, both smooth and corrugated, makes one of the best vehicles we have for carrying all kinds of polishing powders, for finishing fillings, and like work at the chair. It has often occurred to me that they would be just as useful in the laboratory; and, as they were not on the market, I worked out a plan for making them, whereby any dentist can have a good supply at a small outlay.

To make the patterns for cones, take a square piece of soft wood of suitable length and size; center it by drawing lines diagonally from opposite corners across the end; make a hole in the center about one-eighth inch, or proper size to fit the chuck end of your lathe. Next cut a piece of steel rod the right size to go into the hole and project one-half inch. Mount the pattern on the rod with shellac; place in the lathe and turn down to size and shape desired; to corrugate them, run a V-shaped chisel from base to point. Turn out of good select pieces of wood other cones and wheels, just like the first but smaller; these latter are to be used as cores on which to vulcanize the rubber, and the core should be three-eighths inch shorter and five-eighths inch less in diameter than the patterns. When the patterns and cores are ready, flask as follows: The flask should be a three-ring one, or else one with a shallow bottom, and very deep top ring. Fill the bottom ring with plaster, and, when it begins to set, smooth off even to the top of the flask; imbed as many of the patterns as the flask will contain, sinking the rod and about one-eighth inch of the wood. When hard enough, varnish the whole face of the mold—wood-patterns and all. The pouring of the top ring requires a great deal of care, to avoid the formation of bubbles or air cavities. Mix the plaster quite thick, pour in a

little at a time, jarring the air to the surface each time you add plaster. When the plaster has set, the flask should be opened carefully by prying apart all around the joints. When open, remove the wood-patterns, and replace with the wooden cores on which the rubber is to be vulcanized. The cores should have their surfaces pitted all over to hold the rubber firm. Cut the rubber in strips about one-fourth to one-half inch wide, and long enough to reach to the bottom of the hole, and extend out far enough to allow sufficient surplus. Warm the top part of the flask, also the rubber; pack the rubber lengthwise till you are sure there is more than enough to fill the space between the core and plaster. Put in the bolts, heat and close the flask as for a set of teeth. The time allowed for vulcanizing must be governed by thickness of pieces. I usually run to twenty pounds, then give thirty to forty minutes to reach fifty-five pounds, and hold at this point thirty minutes. The smaller wheels and cones can be made of solid rubber; in which case, vulcanize a little slower and give more time. The rubber used for this work can be bought of any dealer in rubber stamp goods, and should not cost more than seventy-five to ninety-five cents per pound.—DR. WM. H. STEELE in *Items*.

COMPARATIVE METHODS.

QUERY.—*Patient, attractive young woman, pearly teeth, first superior bicuspid missing. Cuspid and second bicuspid not decayed. How would you bridge a tooth into the space?*

ANSWERS.

For first bicuspid, back up suitable plate tooth. After properly trimming tooth, adapt gold band from cervix to point of cusps of second bicuspid, permit it to pass slightly below margin of gums, a spur of the band to rest in depression of articulating face being desirable; in order to show all of the natural tooth possible, cut out band on buccal surface, beveling and burnishing the part left at cervix to closely resemble gold filling. Of course previous to setting the band it is well soldered to the "dammy."

B. C. CORNWELL, St. Paul, Minn.

Place clasp partly around second bicuspid, and have vulcanite about size of half a nickel come against roof of mouth. Fixed one for a minister once; it was a cuspid though, and to avoid a

plate fixed in this manner and it was a success. There is generally a little space between the teeth after extraction of one so will not have to make any. Avoid touching tooth or cutting it wherever possible.

R. E. MORRISON, Owensboro, Ky.

If bridging was demanded by the patient, I should extend a three cornered bar of platinum and iridium into bicuspid and cuspid, by cutting slots into grinding and anterior surfaces of the bicuspid and the palatine surface of the cuspid, and filling around the bars with gold. This would preclude any gold or bands showing, and would make a firm and durable operation.

J. ALLEN OSMUN, Newark, N. J.

I should persuade her *not* to have space bridged.

J. E. KELLS, New Orleans, La.

A bridge would be my second choice. I should implant a tooth, if permitted. To bridge I should use Dr. Parmly Brown's method. Cavity to be cut into the second bicuspid, and bar baked into first bicuspid, which would extend into second bicuspid cavity, to be anchored by a solid cohesive gold filling. By this method there is no gold to show.

GEORGE H. WELLS, Augusta, Ga.

Solid gold shell crown on bicuspid. Skeleton or hat crown on cuspid, trimming so as to alter the appearance of the face of the tooth as little as possible. A porcelain bicuspid soldered between.

J. H. ALLEN, Birmingham, Ala.

Crown the second bicuspid with gold, attaching a plain plate-tooth for first bicuspid, without saddle.

J. Y. CRAWFORD, Nashville, Tenn.

Cap the bicuspid with gold, leaving the labial aspect of the tooth exposed. To this cap attach the artificial tooth, which will represent the missing bicuspid. A short pin inserted in a cavity formed in the deepest sulcus of the occluding surface of the natural bicuspid and soldered in the gold cap will better secure it.

GEORGE EVANS, New York City.

—*Dental Mirror*.

PORCELAIN CROWNS.

FOR the anterior teeth, there is no all porcelain crown not open to serious objection. Probably a few years hence dentists will be wondering at the blindness that allowed them to mount Logan, or any other porcelain crown with cement; especially

with an entirely unprotected joint between root and crown. Many valuable roots are thus each year being put in a way to be lost. Amalgam is undoubtedly (in a general sense) the best material now in use for mounting crowns. The discoloration at the gum line being the principal objection, but this can be obviated by using a band, and double strength is thus secured; as the filling of amalgam not only protects the root from decay, but greatly strengthens it. The How four-pin crown has been in use for several years by me, and gives great satisfaction when set in the following manner: It will be remembered that the pins are long and are to be bent around a post which is by the inventor intended to screw into the root. Instead of this I use a flat or three-sided post, enlarge the root at orifice as much as it will bear, and sloping to follow the shape of the root, enlarging but slightly at the last third. The tooth is nicely ground to fit the root, and to occlude properly with its antagonist; the post sharpened, slightly barbed, cut proper length, and marked, the pins are then bent tightly and fastened to the post with a small quantity of solder. If a band is used it is now adjusted and the crown fitted to it, a small quantity of oxyphosphate inserted within the upper third of the canal and the post pushed entirely up to place and held there until the cement sets; then a plaster investment is formed over the adjoining teeth and the crown itself. This will harden sufficiently in two or three minutes, when the surplus cement, if any, is removed with delicate instruments and a good quality of amalgam forced up into the root, and the lingual surface of the crown faced up with the same. This will be polished, of course, at a subsequent sitting.—DR. G. W. DENNIS, *Ill. So. Review*.

GASOLINE BLOW-PIPE.

WHILE, perhaps, the largest proportion of dentists have facilities for soldering in the use of illuminating gas, there are still many who are compelled to make use of other and inadequate means to accomplish this work. The following description will doubtless, be of use to this class.

The blow-pipe consists of a quart bottle with a mouth about one inch in diameter, fitted with a rubber-stopper, the latter perforated by two holes, through which pass two glass tubes, one extending nearly to the bottom of the bottle, the other merely

passing through the stopper. Two rubber tubes, about four feet long, are attached to the glass tubes. To the end of one of these is inserted two inches of glass tubing to serve as a mouth-piece, and to the other the ordinary mouth blow-pipe. The bottle is half filled with gasoline.

By blowing through the mouth-piece tube, which should be attached to the tube extending to the bottom of the bottle, the air is made to combine with the volatile properties of the gasoline and passes out through the blow-pipe tube and may be ignited by an ordinary alcohol lamp. It produces an intense heat. If it is desired to increase the size of the flame, all that is necessary is to use blow-pipes of varying apertures from one-eighth inch down. Care should be used not to blow in the wrong tube, as this would force the gasoline out of the other tube. A foot blower will be found of advantage.—J. J. REED, *Int.*

TO RETAIN COLLARS ON TEETH OR ROOTS.

HAVING found it difficult to retain on the teeth such collars as are cemented on for regulating purposes, the phosphate getting loose from the enamel, I found that by putting on the rubber-dam, drying the tooth and shellacking it first, it gave the desired ground for the cement to adhere to, and I was able to fasten a narrow band on a cuspid and central, to retain it for weeks, and in removing the same I was compelled to split the band. The shellac varnish is not alone useful as regards the foregoing, but I think that on all roots which it is possible to coat with it the crowns will be much firmer held. There are many cases of bridge-work where one does not care to destroy the crowns by cutting them off, such as a bridge of the upper incisors, retained by collars on the cuspids; or lower centrals, say of one or two teeth, collared or capped to the laterals.

If the cement in crown-work should in time dissolve from under the collars, the shellac does not, and there will not be any decay under the band, as is usually the case after bands have been in position for two years or more.

In shellacking regulating appliances I would advise the addition of a very little powdered pumice or even plaster; this will give still more strength in the union with the cement.—W. G. LANGE, D.D.S., *Cosmos*.

MAKE YOUR OWN HEATING GAS.

It may be an "item of interest" to some one, located as I am, where there is no city gas, to know how I constructed a good heating apparatus, producing a steady, smokeless and hot flame, suitable for most laboratory operations. It can be constructed at a cost of not exceeding two dollars for materials and the production of gas at a mere trifle of expense.

I first made a small bellows, which forces air through a rubber tube to the bottom of a two-quart kerosene can, to the spout of which can is a rubber tube leading to a small gasometer, made of tin, varnished inside and out with asphaltum varnish. From this is a tube to a wash bottle, and from this is a tube to a bunsen burner.

I put about a quart of gasoline in the kerosene can or generator, work the bellows which forces air through the gasoline into the gasometer, where it awaits your pleasure in the form of a gas which is nearly equal to that servant which our city brother is so fortunate as to possess.—Dr. A. W. DAVISSON, *Items*.

TAKING IMPRESSIONS OF DIFFICULT CASES.

SOME months since, a gentleman came to me for a partial plate to supply the four upper incisors and one first bicuspid. The arch was high and narrow, teeth long, loose and bell crowned; the lower teeth very long and irregular and jaws incapable of opening wide enough for a tray. It seemed a "desperate" case.

First, strips of wax were placed against the lingual surface of the teeth, which had been previously dried. A piece of flexible card-board was cut to fit within the arch; plaster mixed quite thick, but so as to harden slowly, was then carried up into the highest part of the mouth and pressed up with the finger, then more applied to all the parts desired to have reproduced, and lastly the card-board pressed up and held in place while the plaster hardened; removal was not difficult and a good impression resulted.—Dr. G. W. DENNIS, *Ill. So. Review*.

TO MELT PLATINUM.

TAKE a piece of soft charcoal and make a small cup-shaped cavity in it. Make a like cavity in another piece of charcoal,

but cut a shallow groove leading out from the cavity. Place in the first cup three or four pennyweights of platinum scraps or teeth-pins. Cover them up with the second piece of coal, so placed that its cup shall be over the other cup. Attach a tube from a nitrous oxide gas cylinder to the mouth-piece of a Melotte blow-pipe, and direct the compound gas flame through the groove in the charcoal onto the platinum. When this is at the point of fusion, put it quickly under blows of a hammer to condense the mass. Repeat the process until the piece is suitably shaped, and then pass it through the rolls for use.—GEO. W. MELOTTE, M.D.S., *Cosmos*.

FITTING BANDS TO ROOTS.

FOR securing the measure of roots an instrument can be used shaped like a pair of small pliers, the point of each half being split and having a ring upon it, forming a miniature clamp. A piece of tagger's tin is cut about the desired length, and wide enough to rise a trifle above the end of the root. The jaws of the pliers are clamped upon this, and by compressing the handles the tin is drawn around the root and the measure quickly and accurately obtained. Gold crowns are too well understood to need more than passing notice. My own preference in constructing them is, on the score of strength and simplicity, to *cast* the cusps, then fit and solder the band.—DR. G. W. DENNIS, *Ill. So. Review*.

Correspondence.

"I charge you that this epistle be read."

THE FIRST DISTRICT DENTAL SOCIETY OF NEW YORK.

THIS society held its regular monthly clinic and meeting on November 11, 1890.

The clinic as usual was presented in the cramped quarters a dental depot can spare and a few could see something of the following programme:

Dr. S. C. G. Watkins placed a gold filling, using glass instruments, double ended, *à la* Shumway.

Dr. F. J. McLaren showed a small office furnace, compact and effective for porcelain work.

Dr. E. P. Brown showed among other things a box for polishing strips, neat and convenient.

Dr. E. D. Frost was down for a contour operation with mechanical mallet.

The attendance was something over three score and ten, but few of that ripe age were present. The younger men seem to be expected to attend the meetings they are supposed to control.

Although not on the printed programme Dr. R. I. Hunter, of Norfolk, Va., showed his obtunder, claimed to be non-escharotic and effective in tooth excavation. A limited use of this obtunder under careful observation indicates it to *be* escharotic if used freely enough to secure any extensive effect. Carefully applied in isolated small spots it may have a limited usefulness. As an obtunder of sensitive dentine it has not proved itself effective.

In the evening, at the New York Academy of Medicine, a paper on "Translumination of the Antrum, Larynx, Nasal Cavities and Frontal Sinuses," with remarks on the "Treatment of Empyema of the Antrum," by Wendell C. Phillips, M.D., was read. The paper was well written and well presented. It was demonstrated by an electrical illuminating apparatus and both paper and demonstration would have proved highly enjoyable and profitable had the audience heeded the request of the essayist to keep in their seats that all might see, as effective provision had been made by raising the patient on a platform. It is doubtful if the crowdiers were fully benefited by what they saw even had they pockets in which to stow the reward of their prowess. The paper was followed by but little discussion and that complimentary in tone.

Dr. W. H. Atkinson spoke in his usual fearless manner and as usual introduced in his remarks the new remedy, Pyoktanin.

Dr. W. H. Dwinelle made a happy oratorical effort in complimenting the essayist.

Dr. N. W. Kingsley after endorsing the paper brought up the question of a dinner to the "Patriarch," first broached in that great and growing land, Jersey, to which we owe *advanced* (?) law and new doctrine. Of late Jersey is ever bobbing up serenely for our attention. The *Mirror* prints a warning of a

squall coming, we thought *it* would start in Jersey, but the ethics considered at the First District meeting serve to hint that it was nearer home.

Patriarch Kingsley is now on his metal to push to the wall some momentous questions. All hail to his back bone; a fight needs grit and a riper time to settle the ethical question could not be.

Dr. J. N. Farrar briefly reviewed the paper and presented his method of gaining access to the antrum through the nasal cavity with an instrument much like a knitting needle with holes in the end.

A dental club is talked at random and some day the doors will be thrown open and clinics and museum and library, fraternity and *true* ethics will be within reach.

Yours truly,

R. E. PORTER.

Editors' Specials.

"Write the Vision and make it plain."

THE OHIO STATE DENTAL SOCIETY.

THE sixth annual meeting of this society was held in the Senate Chamber of the State House at Columbus on Oct. 28, 29 and 30, 1890.

The attendance was quite large and the papers presented were interesting. We expected to be able to present all the papers read, in this issue of the JOURNAL, but delay in getting engravings obliges us to carry Dr. Fletcher's and Dr. Butler's excellent articles over to the January issue. The other articles will be found in this number and are well worthy of a careful perusal. The writer heard many dentists remark that they expected to see some clinics but were disappointed. Those who took new things to present exhibited them privately as no time was allotted for their presentation to the society. In this progressive age clinics and exhibits do more than anything else to call out a good attendance and we hope that the new project of establishing a dental institute in the State, where clinics and exhibits can be given each year, will be carried out successfully.

The society adjourned to meet at Columbus on the first Tuesday in December, 1891, the change of month, for various reasons, having been thought best.

The officers for the ensuing year are as follows: President, E. G. Betty, Cincinnati; 1st Vice-President, J. R. Callahan, Cincinnati; 2nd Vice-President, G. H. Wilson, Painesville; Secretary, Otto Arnold, Columbus; Assistant Secretary, Henry Barnes, Cleveland; Treasurer, C. I. Keely, Hamilton.

Board of Directors.—For three years. D. R. Jennings, C. M. Wright, W. H. Todd, O. N. Hisey. For two years.—Charles Welch, F. C. Runyan, W. H. Sillito, L. P. Bethel. For one year.—C. H. Harroun, J. E. Robinson, D. R. Haight, J. A. Lupton.

State Board of Dental Examiners.—Three years, H. A. Smith; two years, J. Taft, L. E. Custer; one year, C. R. Butler, E. G. Betty.

What We See and Hear.

[We are always pleased to receive short, practical articles for this department, and invite any to send brief descriptions of such appliances, devices, methods, remedies, etc., as will be of interest to the profession.]

TO REMOVE IODOFORM ODOR FROM THE HANDS.—Bitnert, in the *Ph. Ztg. Russel.*, recommends washing with linseedmeal and water. The odor disappears very quickly.

IN CHRONIC ABSCESS with fistula of long standing, nothing is gained by treating week after week. Fill as in other cases; then if it does not heal, make a horizontal incision in the gum, and with a fissure bur amputate the apex of the root and bur out the necrosed bone. It will not heal otherwise. The apex of the root will be found to be denuded, rough and jagged, sometimes black.—DR. D. P. SIMS.

GOLD RETAINER.—DR. L. C. BRYAN uses a small portion of amalgam, rubbed into the uneven surfaces of a cavity which is to be filled with soft and cohesive gold; where the artistic effect will not be marred by the exposure of the amalgam, which always becomes very dark, no matter what amalgam is used. This gives a most rigid base, and seems to anchor the gold in the most solid manner possible, and is especially useful when the

retention is slight. A very slight bit of amalgam will amalgamate the base of a soft gold filling and adapt it perfectly to the floor of the cavity, and has no objectionable qualities when out of sight.—*Int. Jour.*

A NEW MATERIAL FOR POLISHING STRIPS.—Almost every conceivable material has been suggested by the manufacturer of strips for polishing fillings or the approximal surfaces of the teeth. I have found a very suitable material for this purpose in the tracing-cloth used by architects. The cloth is extremely tough, very thin (thinner than anything I know to be used for polishing fillings), pliable, and retains these qualities when moist. The tracing-cloth can be procured of any dealer in art materials, or architects' supplies, and of some of the more extensive stationery dealers. It comes in widths of 36 inches and more, and is sold by the yard. The cost for the 36-inch width is 50 cents per yard. Try it.—DR. L. OTTOFY, *Review*.

CAPPING EXPOSED PULPS.—For several years I have been using a medicated chloro gutta-percha to cap exposed nerves in teeth, and with satisfaction to myself and patrons.

To one-half ounce of chloroform add pieces of gutta-percha (such as used for base-plates) till the solution is about the consistency of thick cream; add five drops carbolic acid, ten drops spirits of camphor, and five drops oil of cloves. After applying the rubber-dam and excavating properly, dip a small instrument in the solution and apply to the point of exposure, and be sure to flow it over the point exposed without making any pressure. After it is dry, cut a small piece of letter paper and apply a little of the solution to one side and gently apply over the first application. As soon as that is dry, apply another piece in like manner. As soon as there is thickness enough over the point exposed to resist slight pressure it is ready to fill with either amalgam or cement.—*Items*.

PYOKTANIN.—This new antiseptic, of the coal-tar or analine series, is presented by its discoverer, Prof. J. Stilling, of Strasbourg University, as a true but harmless therapeutical disinfectant; that is, an absolutely sure and yet perfectly safe bactericide, eminently adapted for permeation through animal tissues and fluids in the living body. There are two varieties of this sub-

stance, blue and yellow pyoktanin, the former of which is the stronger. The different forms in which this substance is presented for use are as follows:—

Pure poktanin, in divided powders, is used on the surfaces of large purulent wounds and ulcers, until a firm scab has formed; the scab is then left to spontaneous desquamation.

Pyoktanin dusting powder (2 per cent.) may be sprinkled on skin-abrasions, moist eczemas, and the like.

Pyoktannin pencils (the large size) are used in minor surgery for the sterilization of fresh wounds, in small purulent wounds and ulcers (which, however, must not be much larger than a silver dollar), in small burns and scalds, in paronychias, etc. The pencil is dipped into water, and then passed over the traumatic surfaces until a continuous coat of color is apparent over their entire extent; thereupon they are abandoned to spontaneous desquamation. The small size is used principally for ophthalmological purposes, as the sterilization of purulent corneal ulcers.

Pyoktanin solutions $\frac{1}{1000}$ to $\frac{1}{100}$ are used in conjunctival and corneal affections. For surgical use, the strength of the solution varies from $\frac{1}{10000}$ to $\frac{1}{1000}$. Solutions of the latter strength are employed for general disinfection, in spittoons of consumptives, etc.

Pyoktanin surgical dressing materials ($\frac{1}{10}$ per cent.) are used for the bandaging of wounds, etc.; for the antiseptic stuffing of cavities, the gauze must be impregnated with pure pyoktanin.—*Merck's Bulletin*.

Pyoktanin is merely a trade-marked name for aniline, any shade (blue, yellow, red), chemically pure, free from arsenic; and the fact that these products have antiseptic properties was published eighteen years ago in St. Louis, by Dr. Charles O. Curtman, and many American physicians and surgeons in various localities have been quietly using aniline antiseptic solutions ever since.—*Notes on New Remedies*.

Books and Pamphlets.

IRREGULARITIES OF THE TEETH AND THEIR TREATMENT, by
EUGENE S. TALBOT, M.D., D.D.S., Prof. of Dental Surgery in the Woman's
Medical College; Lecturer on Dental Pathology and Surgery in the Rush

Medical College, Chicago. Second edition revised and enlarged; pp. 261. Philadelphia: P. Blakiston, Son & Co., Publishers. 1890.

The author of this work is well known to the dental profession; if not by the first edition of this book he certainly is through the many valuable contributions, to different dental journals, of the causes of irregularities, etc. Dr. Talbot has for years made a special study of the causes of irregularities, both constitutional and local, and tabulated examinations of several thousand cases. The knowledge gained has been incorporated in this volume, which with the aid of 234 illustrations, makes it a valuable treatise on this subject. The author has taken particular pains to make the treatment of etiology complete, and the distinctions of the causes of irregularities clear. Regarding the correction of irregularities, he says: No fixed rules can be laid down for treatment as in surgery, because the resistance offered by each case is a force known only approximately beforehand. Only the general law can be laid down for correction, this law being subject to modification by experiment. For this reason the author has described the mechanical laws, illustrated their application in the simplest manner possible, and has given practical cases where they have been found efficient. He believes this method to be the best to impress the principal features of the operative treatment of irregularities upon the mind of the student. The author has omitted many appliances in use, not because he believes them less efficient than some of those given, but because, in his opinion, they add nothing to the illustration of the principle. The book ought to find a place in every dentist's library.

A COMPEND OF DENTAL PATHOLOGY AND DENTAL MEDICINE, containing the most noteworthy points upon the subjects of interest to the dental student, by GEORGE W. WARREN, D.D.S., Clinical Chief Pennsylvania College of Dental Surgery. Philadelphia: P. Blakiston, Son & Co., Publishers. 1890. Price, \$1.00; interleaved for taking notes, \$1.25.

This is one of the series of popular quiz compends published by this well known firm. The first 43 pages are devoted to the Development, Structure and Anatomy of the Teeth, Dental Pathology and Therapeutics, Diseases of the Hard Structures, Dental Pulp and Membrane, Injuries and Diseases of the Maxillary Bones, Defects of the Palatine Organs, Extraction of Teeth and Calcareous deposits. The remaining 64 pages are devoted to the most generally used medicines in dentistry. The object of the book is to aid the student by giving the most important points about these few medicines rather than to give an exhaustive treatise on the whole subject. The student will find it a useful help.

ANNUAL OF THE UNIVERSAL MEDICAL SCIENCES. A yearly report of the Progress of the General Sanitary Sciences throughout the world. Edited by CHAS. E. SAJOUS, M.D., and seventy associate editors assisted by over two hundred corresponding editors, collaborators and correspondents. Philadelphia: F. A. Davis, Publisher. 1890. Five volumes. Price, per set, cloth \$15.00; half Russia, \$20.00.

There is no reason why the general practitioner should be behind the times when such a complete resume of the best methods, given during the past year, is to be obtained in these annuals.

The knowledge given is not from merely a few minds, or even one nation, but from the ablest men in the medical profession throughout the whole world. To give a complete review of these volumes would require more space than our limited pages will admit, but the reader can get some idea of the amount of work represented, from the number of editors, collaborators and correspondents engaged.

As to the method of presenting the subjects each volume is divided into sections, for instance in Vol. I, Section A, treats of the lungs and pleura, and is edited by Dr. James T. Whittaker, M.D., assisted by others. In this section is comprised all the work of the year that is new, extracts from new papers, very extended in many cases, and so cited in the text as to be of easy reference if the whole paper is desired. The article begins with "Tuberculosis," and the compilation is arranged under the successive headings of "Etiology," "Invasion by the Alimentary Canal,—Food and Drink," "Invasion by the Lungs,—Sputum," "Infected Houses," "Symptomatology," "Pathology, Dyspepsia, Studies of the Functions of the Stomach in Phthisis," "Lungs and Liver," "Arteries," "Conformation of the Chest," "Diagnosis," "Detection of Tubercle Bacillus," "Prognosis," "Prophylaxis," "Autoinfection," "Treatment,—Climate"; and then under each remedy which has been advocated we have extracts. Sec. B treats of Diseases of the Heart, Pericardium and Arteries and so on, but this one instance will give the reader an idea of the fullness of the work, and its value not only to the practical worker but to the student and writer.

The value of the work, as will readily be seen from the above, lies in its extent and in the conscientious manner in which its editors have treated their task. Its five volumes, while formidable, perhaps, are none too extensive; there seems to be no padding. Whether in succeeding years so rich a harvest can be gathered from a year's work remains to be seen. Probably the editors will have to glean as well as reap, but for what they have done in the present edition we hope the profession will be properly thankful, and show their sentiments by supporting an invaluable work.

These volumes are sold by subscription, and *The Satellite*, a monthly journal, supplement to the work, is sent to each subscriber.

BOOKS RECEIVED.

A COMPEND OF HUMAN ANATOMY, by Sam'l O. L. Potter, M.A., M.D. Fifth edition. Philadelphia: P. Blakiston, Son & Co., Publishers. 1890. Price, \$1.00.

A TREATISE ON THE IRREGULARITIES OF THE TEETH AND THEIR CORRECTION. Designed for Practitioners and Students, by J. N. Farrar, M.D., D.D.S. 2,000 engravings. Vol. I. New York: Published by the author. Price, cloth \$6.00.

DESCRIPTIVE ANATOMY OF THE HUMAN TEETH, by G. V. Black, M.D., D.D.S. Philadelphia: The Wilmington Dental Manufacturing Co., Publishers. 1890. Price, cloth \$2.50.

TRANSACTIONS OF THE AMERICAN DENTAL ASSOCIATION, 1890. Chicago: H. D. Justi—The Dental Review Co., Publisers.

THE PHYSICIAN'S VISITING LIST FOR 1891. Philadelphia: P. Blakiston, Son & Co., Publishers. Price \$1.00.

Our Aftermath.

It is said that a dental college will soon be established at Melbourne, Australia.

DR. W. H. WHITSLAR, of Youngston, O., and DR. N. S. HOFF, of Ann Arbor, Mich., are now associate editors of the *Dental Register*.

PROF. W. D. MILLER, of Berlin, Germany, of micro-organism fame, has recently visited this country and from the number of receptions tendered him in different cities we conclude he was well received. Dr. Miller was an Ohio boy, graduated in dentistry at the University of Pennsylvania and now holds a professorship in Berlin—the first American so honored.

CHAPPED HANDS.—An excellent remedy is given as follows:

R	Menthol	-	-	-	-	-	-	gr. xv.
	Salol.							
	Olive Oil	-	-	-	-	-	aa	gr. xxx.
	Lanolin	-	-	-	-	-		℥ ss.
	M.							

Publishers' Notice.

IMPORTANT.

AS MOST of our subscribers have requested us to send THE OHIO JOURNAL to their address until forbid, we will continue sending THE JOURNAL to all unless otherwise notified. Should there be any of our subscribers who, from any cause, desire to have the JOURNAL discontinued they will do us a special favor by so notifying us.

Our subscribers should also bear in mind that it costs a great amount of money to issue a journal, and we kindly ask them to be as prompt as convenient, in remitting us the amount of subscription, which is only \$2.00.

THE OHIO JOURNAL FOR 1891.

FROM the many testimonials and compliments received, as well as the increased prosperity of the OHIO JOURNAL during the past year, we fully realize that the arrangement and character of reading matter as presented meets with universal favor. We therefore deem it best to continue the JOURNAL in the same way unless future happenings point out some change that will be still more beneficial to our readers.

We wish also to call attention of our readers to the fact that THE OHIO JOURNAL *is the only dental journal* published having a special department on Prosthetic Dentistry and Crown and Bridge-Work. By bringing before the notice of our readers each month the newest methods presented to the profession, through all sources, it makes quite an encyclopedia and a valuable book of reference. Our contributors, both American and Foreign, will continue to give the JOURNAL their best thoughts. The WHAT WE SEE AND HEAR Department will be conducted as in the past and all of the best *practical* thoughts given at societies, through other journals, dental literature in general or contributed will be presented. OUR AFTERMATH will contain items of a personal, or newsy character. The CORRESPONDENCE Department will contain letters from prominent dentists. The SOCIETY Department will keep our readers posted as to date of meetings, notice of society elections, commencements, etc. EDITORIALS will be upon current topics and such subjects as will be of interest to all. Society Proceedings will be fairly reported and in fact everything will be done to keep THE OHIO JOURNAL in the front rank of dental journalism and to give our readers that variety that is always relished.

In appreciation of the many kind words spoken for THE JOURNAL and its increased list of subscribers, we extend our hearty thanks and hope that in the future as in the past we may be able to keep up the record and give our subscribers many times the worth of their investment.

Those subscribing for the coming year before January 1st, 1891, will receive the September, October, November, and December, 1890, JOURNALS GRATIS. Subscribe through your dental dealer or through the publishers direct.

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OF
DENTAL SCIENCE.

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L. P. BETHEL, D. D. S.,
TOLEDO, OHIO.

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A Bargain.—Doctor, do you want a \$1,200 practice in a city of 5,000? A Morrison Chair, Improved White Engine, Model Cabinet, Gosometer, Lath, Bracket, etc. If so, write with stamp to J. F. McCAMANT, D.D.S., Box 474, Niles, Ohio.

For Sale.—Leading practice in a growing little city in Miami Valley, established near 40 years. Rich surrounding country. Office snug and cozy and in good location. Will make price suit. Health, reason for selling. If you mean business write for full particulars. Address "VINDEX," care of Ransom & Randolph, Toledo, Ohio.

LOOK AT THESE BARGAINS!

1 Archer Chair, green plush, good, fair condition	- - -	\$25.00
1 Archer Chair, fig. plush, foot-stool and instrument stand	- - -	30.00
1 Johnston engine, Hodge hand-piece, in good, fair condition	- - -	20.00
1 S. S. W., O. S. dental engine, good condition with Register H. P. new	- - -	25.00
1 Archer No. 2 Dental Chair with attached foot-stool; cover new	- - -	40.00
1 Davis & Leyden upright lathe, as good as new	- - -	10.00
One second-hand Carroll aluminum apparatus. Fair condition.		
1 Johnston, second-hand engine, No. 2 hand-piece. In good order	- - -	25.00
Gas apparatus complete with stand, and cylinder filled	- - -	20.00

NEW THINGS

recently introduced for the dental profession are :

Elliott's Separator	- - - - -	\$ 2.50
Lewis' Contouring Pliers	- - - - -	1.00
Evans' Crown and Bridge-work, new edition	- - - - -	3.00
Gold Rolls—a practical pair (send for circular), only	- - - - -	15.00
Crown Jack for removing gold crowns and bridge-work (send for circular), each	- - - - -	1.50
*New shape upper wisdom forceps, N. P. Just the thing, each	- - - - -	3.00
*Diamond points for crown and bridge-workers, each	- - 50c, 75c,	1.00
*New style root-dressing corundum points, mounted, per doz.	- - - - -	2.00
*Adjustable saw frames, each	- - - - -	1.50
*Fixed blade separators, each	- - - - -	.75
*Walker's vulcanizable "granular gum" facing—well liked—	- - - - -	
ahead of pink rubber, mottled, per oz.	- - - - -	1.00
Purple, dark, or light, per oz.	- - - - -	1.15
Florid, dark, or light, per oz.	- - - - -	1.15
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Diamond disks, charged on edge, and flat surface, each	- - - - -	1.50
A new three case solid vulcanizer	- - - - -	16.00
†Dr. Teague's Impression Compound, a substitute for plaster, but especially advantageous for making metal dies. Price per can	- - - - -	.50
When you order these things tell us to send one ounce of King's Occidental Amalgam, \$3.00 per oz.		

* See July Cosmos. † See adv. in July Items.

For Sale by

RANSOM & RANDOLPH, Toledo, Ohio.

Bannister's Mechanical Dental Ledger

A Book of 340 pages, giving space for 1,190 accounts, bound in leather with bands and ends. Price \$3.00.

At the left hand of the page place the date, with name and residence, marking out on the cut teeth extracted, and under remarks, the time that patient is to return for plate, and follow it with credit of amount paid for extracting. The right hand page is for date; when plate is made, the kind of material used, number of the mold of teeth, shade and name of the manufacturer of the teeth. Blank for memoranda, amount of bill, and column for credit of bill when paid. This Register of all mechanical work will be found of great value to any dentist, and especially when plates are brought back for repairs.

Published by

RANSOM & RANDOLPH,

Dental Depot.

513 Jefferson Street,

Toledo, O.

We fill all orders promptly and will send by return mail or express anything you may need in the Dental line.

King's Occidental Amalgam.

A fast selling Superior Alloy that has for years given the best of satisfaction. The process of manufacture differs from that of other amalgams and by

A NEW INVENTION

Dr. King is enabled to obtain better results, both in regard to COLOR, SHRINKAGE, and EXPANSION, than is obtained in any other alloy on the market.

TRY IT TO BE CONVINCED.

PRICE REDUCED. Per Ounce, \$3.00; 2 ounces, \$5.50; 4 ounces, \$10.00.

GOLD.

You will find all our makes of gold foil of SUPERIOR QUALITY.

Ransom & Randolph's Gold Foil, Soft and Cohesive,

Improved Soft Gold Foil,

Occidental Gold Foil, Soft, Cohesive and Semi-Cohesive.

R. & R. AND IMPROVED SOFT GOLD.

Per Ounce	-	-	-	-	-	-	-	-	-	\$28.00
" half ounce	-	-	-	-	-	-	-	-	-	14.00
" quarter ounce	-	-	-	-	-	-	-	-	-	7.00
" book, $\frac{1}{4}$ ounce	-	-	-	-	-	-	-	-	-	3.75

OCCIDENTAL GOLD.

Per Ounce	-	-	-	-	-	-	-	-	-	\$30.00
" half ounce	-	-	-	-	-	-	-	-	-	15.00
" quarter ounce	-	-	-	-	-	-	-	-	-	7.50
" book, $\frac{1}{4}$ ounce	-	-	-	-	-	-	-	-	-	4.00

RANSOM & RANDOLPH'S

Fine Dental Rubber.

This is a dark rubber like whalebone and bow spring, but with less liability to become porous vulcanized quickly. This rubber is giving good satisfaction.

Price—1 lb., \$2.75; 5 lb. lots, \$2.50 per lb.; 10 lb. lots, \$2.00 per lb.

UNIVERSITY OF MICHIGAN.

College of Dental Surgery.

The 16th Annual Session begins October 1, 1890, and closes June 25, 1891.

The preliminary examination will be held Tuesday September 30, 1890.

Three full courses of study of nine months each are required for graduation.

The fees, which must be paid in advance each year, are, for non-residents of Michigan, \$60, first year; \$35 second year, and \$45 third year. These fees cover all expense of tuition, but not of material used in laboratory courses.

The annual announcement containing full particulars will be sent to any one addressing a request to

J. TAFT, *Dean*, Ann Arbor, Mich.

The Chicago Post-Graduate School of Prosthetic Dentistry And Dental Laboratory.

34 Monroe Street, - - - Chicago.

OFFICERS.

L. P. HASKELL, - - - President.
M. STOUT, - - - Secretary and Treas.

This Laboratory is prepared to do all kinds of artificial dentures including crown and bridge-work. Send for price list.

The Post-Graduate School is open at all times, no "classes" nor lectures, simply technical instruction in everything pertaining to Prosthetic Dentistry, under the supervision of Dr. Haskell.

Russell's Alloy No. 1.

Per oz. - - - - - \$4.00

Russell's Copper Amalgam.

Per oz. - - - - - \$2.50.

ARE THE STANDARD PREPARATIONS. For Sale Everywhere.

MANUFACTURED BY

Julien W. Russell, M.D.S.,

**P. O Box 81,
Brooklyn, N. Y.**

C. F. Fahrbach,
**10 California St.,
San Francisco, Cal.**

Agent for the Pacific Slope.

For Sale by RANSOM & RANDOLPH,

513 Jefferson Street,

TOLEDO, OHIO.



'TIS true we were in wretched plight
 Unfit to masticate or bite,
 Though tempting dishes might be spread
 They did not suit the toothless head,
 And but for aid, that healed our woes,
 In shape of artificial rows,
 We, long ere this had sunk to rest
 In mother earth's receiving breast,
 Then well may we in language brief
 Extol the Firm that brought relief,
 THE DENTAL MANUFACTURING CO.,
 Of WILMINGTON, at prices low,
 Will forward to the Dentist's hand
 The full supplies upon demand,
 That Dentist's need while they pursue
 Their practice all the seasons through,
 They keep the Scalers, Burs and Lamps,
 The Presses, Pluggers, Mallets, Clamps,
 The Forceps that will clean the jaws
 And Stump Extractors, Drills, and Saws.

80 PER CENT. INCREASE

in reading matter will appear in each number of the

ITEMS OF INTEREST FOR 1890

without any increase in price. The January number appears in a new dress.

T. B. Welch, M.D., Editor.

The Wilmington Dental Manufacturing Co.

No. 1413 Filbert St., Philadelphia, Pa.

Our journal soon enters upon its *twelfth* volume after an unique history in dental journalism, in which we have been successful, having met a long felt want, in this rushing age—conciseness.

We ask you to consider its general character and see if becoming a subscriber will not be of advantage to you. If you prefer exhaustive treatises on abstruse subjects, and long detailed reports of conventions, you will not like it; but if you find it profitable to have a dental magazine crowded with the most important current thoughts of the profession, we think you will like the *ITEMS OF INTEREST*. Our contributors please us by giving thoughts and experiences of the most vital interest, and in selecting from our excellent contemporary journals we take the most intrinsically valuable. No pains are spared to make the contents of each number an intellectual feast.

The publication of the *ITEMS OF INTEREST* is as expensive as journals costing two dollars and fifty cents a year, and our personal labor on it is certainly equal to the labor given to any of them. At our price of subscription it was a long time before our expenses were met by our subscribers, but we are now realizing what we anticipated—that a good, low-priced dental magazine could be made to pay.

We look for a largely increased circulation for 1890, our price, \$1.00 per year, being so small as hardly to be considered, yet when they reach into the thousands, being quite an item, allowing us to keep the subscription at this popular price. Subscriptions are only taken to date from January or July numbers. Foreign subscriptions in postal union countries 50 cents extra. Will you not join us?

THE DIAGRAM APPOINTMENT BOOK.

The "Diagram" Appointment Book and Pocket Diary is a book suggested by practical dentists, and meets the wants of the profession. The "Diagram" Appointment Book is $6\frac{3}{4} \times 4\frac{1}{4}$ inches. In the front it has calendars for three years, and a table to show the number of days from any day in one month to the same day in any other month. The new feature of the book combines with an appointment book a DIAGRAM for registering the work to be done, or to make memorandum of the work when finished, by having a diagram for each day, and the diagram in such shape as to be efficient and yet not make the book bulky and unhandy. There are one week's appointments on two opposite pages, and, therefore, six diagrams on same space. In the back of the book are pages for memoranda.

The book may be used without the diagrams and then is very similar to other appointment books. There can be no disappointment in the paper, ruling, printing or binding, as they are all first-class in every particular.

TUESDAY.

.2. Mo 1.0

8	Miss Frailey	1	P. W. Peck
9		2	Edgar Thomas
10	Bertie Dook	3	
11	Mrs Harmon	4	Paul Rose
12		5	

The above is a facsimile of one day's work in the "Diagram Appointment Book;" the appointments are made as usual, and the fillings are accurately noted on the diagram. No ledger or other memorandum is necessary for immediate use; at leisure the work may be copied into the large ledger, if desired. After each person's name a note may be made of the amount charged or paid. It will be seen that it is easy to keep a record on this diagram of the work of this day, or of any day, by letting the hour of appointment stand for that person in the diagram; thus the figure 8 in the diagram stands for, Miss Frailey, the 8 o'clock appointment.

Price in Cloth, 50 Cents. Leather, 75 Cents.

**The Wilmington Dental Mfg Co.,
PHILADELPHIA.**

STATIONERY FOR 1890.

We offer unusual inducements for furnishing you stationery for the coming year.

The Diagram Appointment Book,

for those who desire to use a diagram, is not equaled, combining simplicity and neatness. We are furnishing unusually fine paper and good binding, with the inducements of low prices; being able to do so on account of their large sale, and in consequence, being able to buy largely at one time, giving you the benefit of low figures.

Cloth, 50 cents. Leather, 75 cents.

The No. 1 Appointment Book

is well known to all old practitioners. We have improved on the old style by adding a memorandum and cash account for each month. Our claim is that we give an extra fine paper and leather binding at prices one-third to one-half less than other dealers. We pride ourselves upon the manner in which this book is made.

Without Tuck 50 cents. With Tuck and Pocket, 75 cents.

All regulated offices of course must have a ledger, and who is not pleased with the

Allport Register,

so simple and neat, and as we sell it, so well made, we are looking for a larger sale than ever for this popular book.

In Half Roan,	300 pages,	1 account to page,	-	-	-	\$2.00
"	"	172	"	2	"	2.00
"	"	340	"	2	"	3.00
"	Half Turkey	340	"	2	"	3.50

all properly indexed. Those who use this register should have our No. 3 or No. 4

Bill Head,

which is similar; the No. 4 is the best, as it is not printed but ruled, making with the register a complete outfit.

No. 4 printed with your name and address for \$1.15 per 100, or 300 for \$3.75.

Examination Tablets

are being more and more used, they cost such a trifle, a chart of three months can be made for one cent, that it is economy and a satisfaction to use them.

30 cents per pad of 100.

The Wilmington Dental Manufacturing Co.

No. 1413 Filbert Street, Philadelphia, Pa.

"Just the thing to give several of my patients," said a prominent dentist on seeing the

IDEAL HOLDER

FOR THE

IDEAL BRUSHES



A beautiful and serviceable toilet requisite. Brushes hang up, always in place, and outlast two ordinary brushes, because *dripping from the head*, the bristles quickly dry, greatly increasing their life and elasticity. These Brushes,

The Prophylactic Tooth Brush,
and the Florence Dental Plate Brush,
are the dentist's standards—perfect cleansers.

A holder gratis with a dozen brushes. 4 styles, 25c., 50c., 75c., and \$1.00 each. For particulars write to your Depot, or to

FLORENCE MANUFACTURING CO., Florence, Mass.
80 PER CENT. PROFIT.

DENTISTS, DOCTORS, AND MEN —OF— Every Calling, LOOK HERE!

Fire and Burglar Proof
SAFES

AT WHOLESALE

Wanted! Wanted!

NAMES and ADDRESSES of all Dentists, Lawyers, Doctors, Merchants, Dealers, Farmers, Housekeepers and men of every calling,

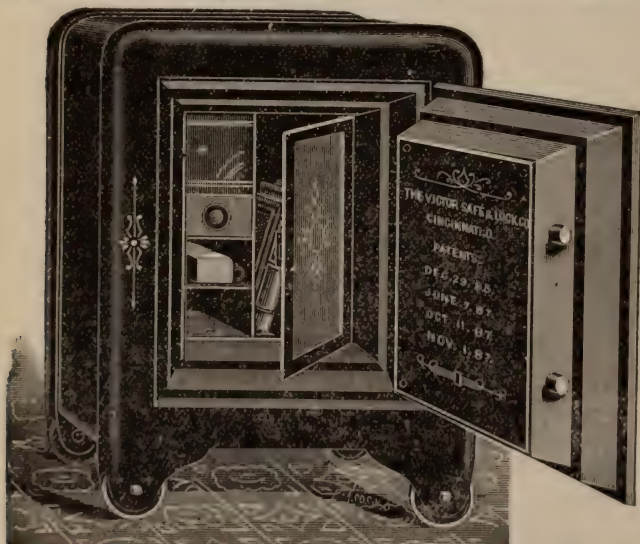
WHO HAVE NO SAFES.

We will furnish you with a **first-class Safe**, strictly fire proof, burglar proof combination lock, beautifully finished and lettered with name at \$12 and upwards.

DEATH TO HIGH PRICES.

We pay no salaries or commissions to middle men nor agents. We have no high salaried officers. We practice strict economy to enable us to sell direct to the user at

LOWEST WHOLESALE PRICES.



EVERY SAFE IS GUARANTEED SATISFACTORY.

The VICTOR SAFES and LOCKS are the latest improved and manufactured under excellent patents, issued Dec. 29, 1885, June 7, 1887, Oct. 11, 1887, and Nov. 1, 1887.

Our prices are about 80 per cent. lower than any others. Mention that you saw our advertisement in **Ohio Journal of Dental Science** and get special discount.

THE VICTOR SAFE & LOCK CO., Cincinnati, Ohio,

13 and 15 E. Canal Street.

CEMENT.

The leading brands we
always keep in
stock.

—
Send in your order.

Engine Burs

BEST QUALITY.

—
CAVITY.

File cut, - - per doz. \$2.25
Stone " - - " 3.00

Gas Apparatus

ALL KINDS.

**Write us for our
prices.**

TEETH.

Large, well assorted stock.

Justi's, White's, Sibley's,
Wilmington and
Ash & Sons.

Orders by mail promptly filled.

LATHE?

**What kind do you
want?**

We have it.

RUBBER.

We can furnish you with any
kind.

Its hard to find better than
Ransom & Randolph's.

Per pound, \$2.75. 5 lb. lots,
\$2.50 per lb.

AMALGAM

We keep all kinds, but

King's Occidental

Is the best.

BILL HEADS.

We can furnish any style in the
market.

BANNISTER'S

One hundred in pad.

Small, 75 cents. Large, \$1.00

Ransom & Randolph's

FLOSS SILK

24 yards on each spool.

Plain, - - per doz. \$1.25
Waxed, - - " 1.75

FURNITURE.

**If you need a Chair, Cabi-
net, Bracket or anything
in that line, write us
for prices.**

MODELLING

COMPOSITION.

Best Quality, per lb. - \$1.25
Magnifique, per box - - 1.00

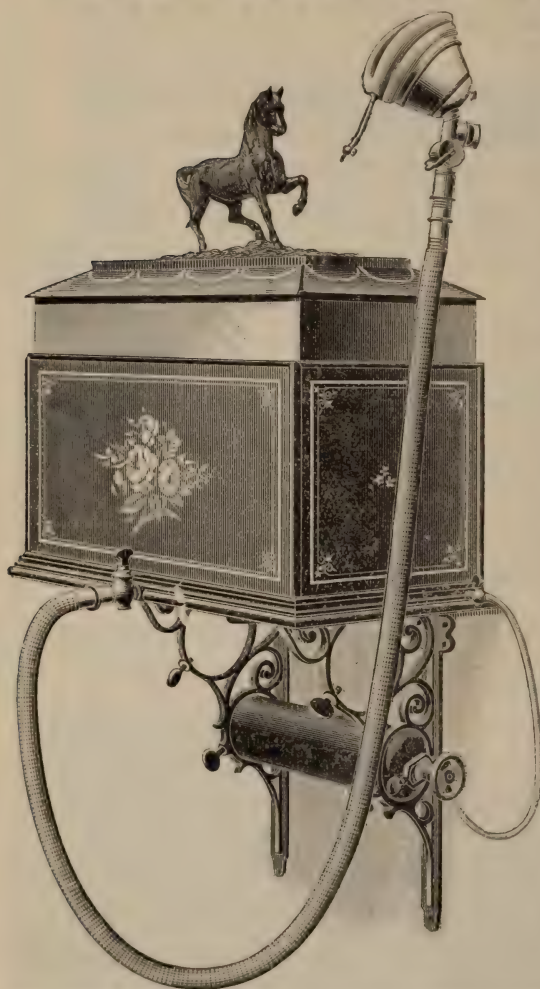
RUBBER-DAM.

**Fresh every few days. Full
width.**

Thin, per yard - - \$1.00
Medium, " - - 1.50
Heavy, " - - 2.00

RANSOM & RANDOLPH, Toledo, Ohio.

FLETCHER GASOMETER.



This Gasometer is unquestionably the most successful apparatus for the administration of nitrous oxide now in use. It is so constructed that the most nervous, as well as patients with weak lungs, can inhale without exertion.

PRICES.

Gasometer and
Ornament - \$21.00
Brackets for Gas-
ometer and Cyl-
inder - \$3.00 per set

Weagant's Pure Copper Amalgam.

\$2.50 per ounce. 5 ounces, \$10.00.

The Amalgam here presented to the profession is composed of PURE COPPER AND MERCURY ONLY; and its superiority is due to the extreme care exercised in its preparation and its entire freedom from impurities of any kind, rendering it powerless to discolor the tooth substance when properly inserted, and making it one of the cleanest, if not the very cleanest, Amalgams to handle ever prepared. *Its fine-grained plasticity has been universally admired.*

It is absolutely an unshrinking Amalgam. There is no waste, the smallest scraps can be worked over.

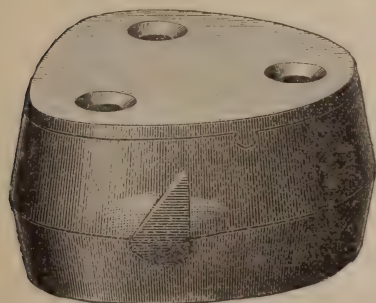
It will turn black, but if properly inserted will not discolor the tooth.

BOSTON DENTAL MANUFACTURING COMPANY
174 Tremont St., BOSTON, MASS.

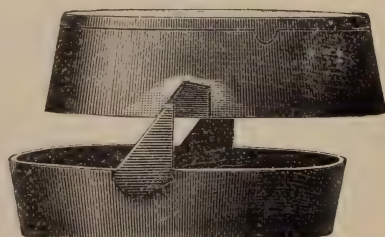


This Vulcanizer is made from gun metal and is tested at one thousand pounds hydraulic pressure. It will hold three flasks of any make—the boiler being the largest of any in use. The packing is moulded instead of being cut in strips and will last for years without being renewed. One gill of water only is required when vulcanizing. The bed-plate jacket, which should always be screwed to the bench, allows an easy and ready method of handling.

Price, - \$16.00



FLASK CLOSED.



FLASK OPEN.

The improvement in this Flask as can readily be seen by the cuts, consists in providing the flasks with guide pins inclosed at such an angle that when the upper part of flask is forced down to imbed the teeth into the gums, it will be moving at such an angle as to allow the projecting alveolar ridge to reach the final position without breaking the plaster investment.

With this Flask the ridge of the plate over the incisor teeth can be moulded as thin as desired. Being made of "gun metal" will not warp in using.

Price - - - - - \$1.50

BOSTON DENTAL MANUFACTURING COMPANY,

174 Tremont St., BOSTON, MASS.

"NE PLUS ULTRA."

ESTABLISHED 1846.

PURE GOLD FOIL,

SOFT, MEDIUM AND COHESIVE,

in any number desired.

The "Soft" can be made *Cohesive* by re-annealing,

WE GUARANTEE IT

*PURE, UNIFORM, TOUGH,
DUCTILE, MALLEABLE.*

QUOTATIONS.

\$4 per 1-8; \$7.50 1-4; \$15 1-2; \$29 per oz.

If not kept by your dealer, send direct to

J. M. NEY & CO.

Refiners and Assayers,

HARTFORD, CONN.

—FOR SALE BY—

RANSOM & RANDOLPH, Toledo,

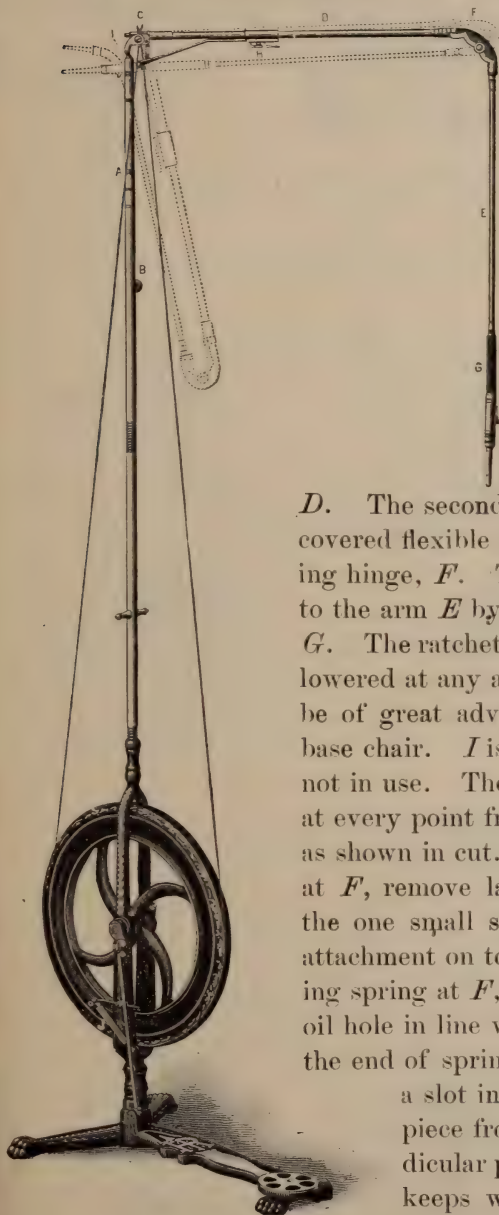
And Dental Depots and their Agents.

WE ALSO FURNISH

*Gold, Silver and Aluminum Plate, Tin Foil and Amalgam, and
pay CASH or EXCHANGE for Gold and
Silver Scraps of all kinds.*

HOOD & REYNOLDS' Improved Standard Engine.

PATENTED AUG. 21, 1888, OCT. 15, 1889.



DESCRIPTION.

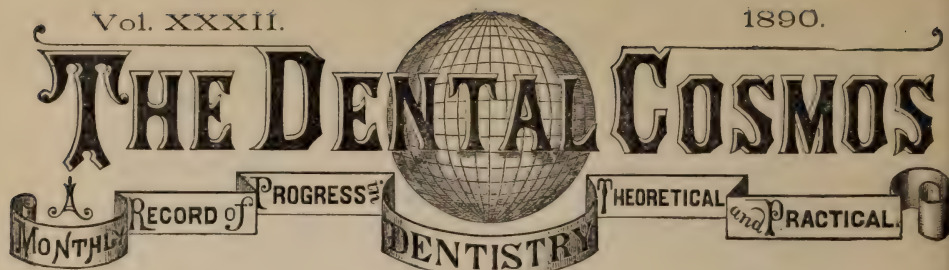
The base carries a driving wheel $12\frac{1}{2}$ ins. in diameter. The standard is rigid, and telescopes at *A*, which allows the tightening of the belt by loosening screw, *B*. On the telescoping section is the pulley, *C*, which is fastened to the driving shaft that runs in arm,

D. The second arm, *E*, is connected by a covered flexible spring which has a supporting hinge, *F*. The hand-piece is connected to the arm *E* by the covered flexible spring, *G*. The ratchet, *H*, allows the arm, *D*, to be lowered at any angle. This will be found to be of great advantage in working at a low base chair. *I* is a rest for hand-piece when not in use. The driving shafts are covered at every point from the pulley to hand-piece, as shown in cut. To put on flexible spring at *F*, remove large screw from hinge, then the one small screw from sheath, then slip attachment on to the arm *E*. When replacing spring at *F*, care should be taken to have oil hole in line with oil hole on shaft *E*. In the end of spring *G* is a screw that engages a slot in arm *E*, that keeps the hand-piece from turning when in a perpendicular position. *J* is the spring that keeps wheel off center.

Price, complete, with 14 Points, \$40. Boxing, 75c.

HOOD & REYNOLDS, 178 Tremont St., Boston, Mass.

Factory at Hyde Park.



THE DENTAL COSMOS

A MONTHLY RECORD OF PROGRESS IN DENTISTRY THEORETICAL and PRACTICAL

A VOLUME OF 1000 PAGES FOR \$2.50.

The DENTAL COSMOS has the LARGEST CIRCULATION of any dental journal in the world.

It contains MORE PAGES OF READING-MATTER than any other dental journal.

It gives MORE ILLUSTRATIONS than any other dental journal.

It furnishes a SUBJECT INDEX with each number.

It supplies a MONTHLY BIBLIOGRAPHY,—a full record of dental literature gleaned from current periodicals and transactions of societies.

It furnishes a record of the current progress of dentistry in theory and practice, so complete as to be to all intents perfect.

Every phase of legitimate dentistry finds recognition and expression in its pages.

Nothing but dentistry finds place therein.

Its advertising department is an accurate index to the material progress of dentistry.

Those desiring to renew their subscriptions will oblige by sending in their names as early as convenient and before the expiration of their present subscriptions. This will obviate the delay attendant upon re-entering names and mailing back numbers.

Subscription, \$2.50 a year, in advance.

Postage free to all subscribers in the United States, Canada, and Mexico.

Foreign postage to Universal Postal Union countries, 50 cents.

THE S. S. WHITE DENTAL MANUFACTURING CO.,
Philadelphia, New York, Boston, Chicago, Brooklyn.

CHARTS OF GUM SECTIONS.

Chart of Gum Sections, Partial.



Upper Bicuspids with Single Cusps, Sets of Four, Sections of Two, Right and Left.

These teeth are especially adapted for extremely short shut (or closure) of the jaws; cases where the elongation of the occluding tooth necessitates an extremely short palatal cusp and the lapping of the teeth; a long bite.

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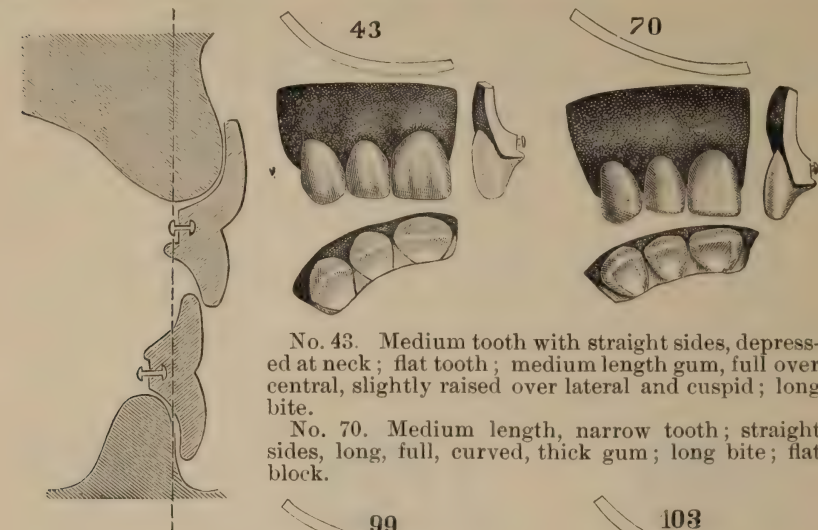


THE S. S. WHITE DENTAL MANUFACTURING CO.

Philadelphia, New York, Boston, Chicago, Brooklyn.

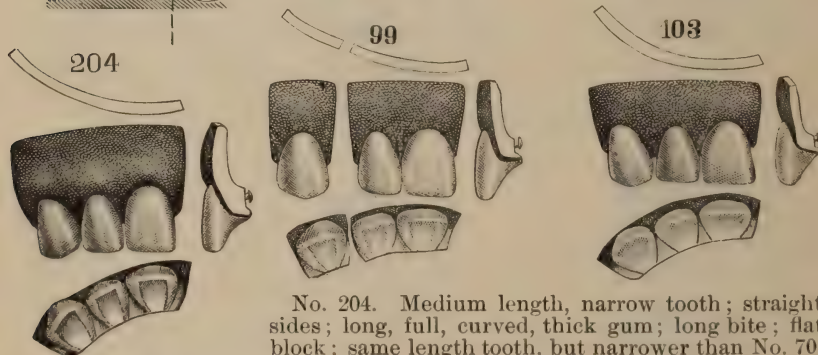
Chart of Gum Sections, Upper, Sets of 14. For Protruding Upper Jaw.

The teeth here represented are for a protruding upper jaw, having a regular, full gum-ridge.



No. 43. Medium tooth with straight sides, depressed at neck; flat tooth; medium length gum, full over central, slightly raised over lateral and cuspid; long bite.

No. 70. Medium length, narrow tooth; straight sides, long, full, curved, thick gum; long bite; flat block.



No. 204. Medium length, narrow tooth; straight sides; long, full, curved, thick gum; long bite; flat block; same length tooth, but narrower than No. 70.

No. 99. The four incisors in two sections; separate cuspid; medium size. thin tooth; medium length, thin gum; long bite.

No. 103. Small tooth; thin section; medium length gum; long bite.



No. 104. Large, medium length, straight tooth; straight sides; thin section, medium length gum; long bite.

No. 105. Large, straight, flat tooth; thin section; medium length gum; long bite.

No. 126. Medium tooth, thin section; medium length gum; short bite.

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Philadelphia,

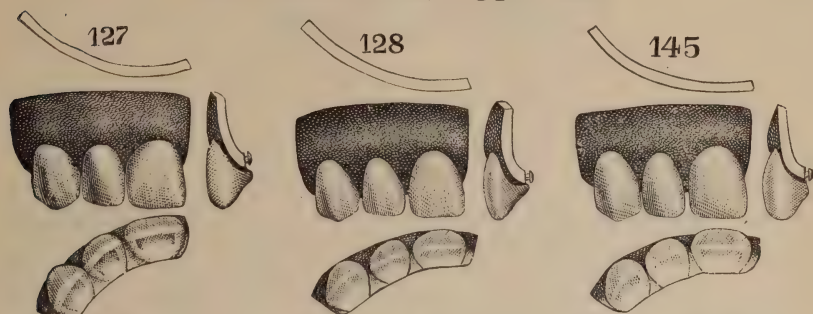
New York,

Boston,

Chicago,

Brooklyn

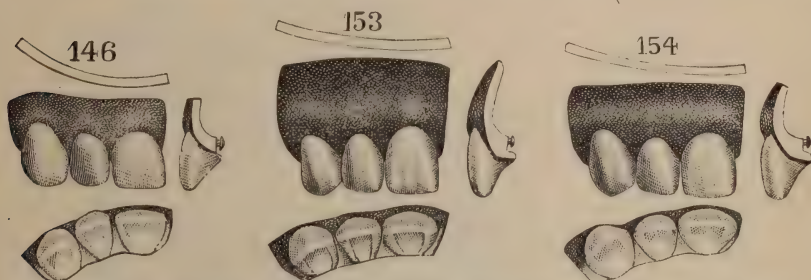
Chart of Gum Sections, Upper, Sets of 14. For Protruding Upper Jaw.



No. 127. Medium tooth, inclined to broad; broad neck, full tooth; thin section; medium length, full gum; medium short bite.

No. 128. Medium tooth; thin section; medium length, full gum, receding at the upper border; short bite.

No. 145. Large medium, bold bow teeth; medium length, thin gum; short bite.

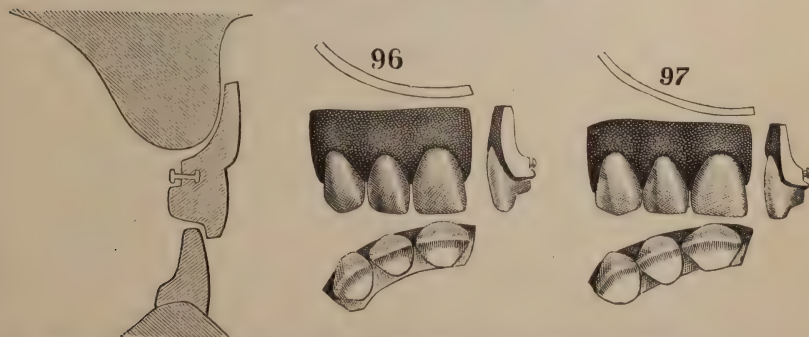


No. 146. Small medium tooth, broad neck; irregular teeth; short, thin gum; extra long bite.

No. 153. Medium tooth; flat section; long receding gum; long bite.

No. 154. Medium tooth; thin, flat section; medium length; receding gum; long bite.

Shouldered Sections, for Masticating Oclusion with the Lower Incisors.



No. 96. Medium tooth; thick, with shoulder; medium length gum.

No. 97. Medium tooth, inclined to broad; thick, with shoulder; short, medium length; thin gum.

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THE S. S. WHITE DENTAL MANUFACTURING CO.
Philadelphia, New York, Boston, Chicago, Brooklyn.

THE S. S. WHITE COPPER AMALGAM.



After careful inspection and manipulation of the various makes of Copper Amalgam which have been placed upon the market during the past few months, we have decided to make an Amalgam to be known as "The S. S. White Copper Amalgam," which we feel warranted in pronouncing much superior to most and fully equal to the best of its predecessors, while the price is from fifty to sixty per cent. below the usual rates.

Put up in 1 oz. boxes.

Price - - - - - per oz. \$1.00

A NEW TEXT-BOOK ON IRREGULARITIES.

ORTHODONTIA :

By S. H. GUILFORD, A.M., D.D.S., Ph.D.,

Professor of Operative and Prosthetic Dentistry in the Philadelphia Dental College :
author of "Nitrous Oxide," etc.

This volume is one of the series of text-books authorized by the National Association of Dental Faculties. Dr. Guilford was selected to prepare it because of his well-known fitness for the task. The completed work has been accepted, and indorsed and recommended by the association.

The book contains nearly 200 pages, with 128 illustrations, many of which are new, printed on fine toned heavy paper, and neatly bound in cloth.

Sent by mail on receipt of price.

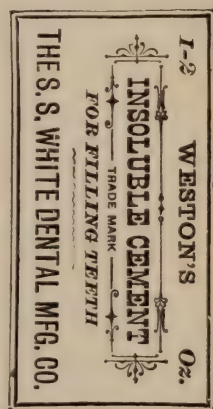
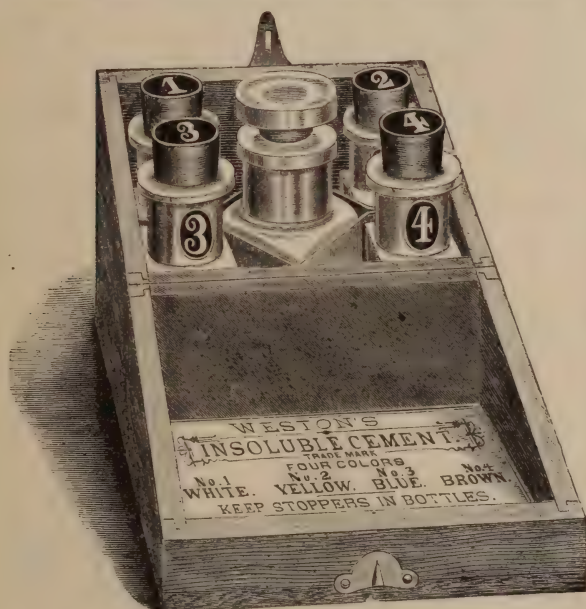
Price - - - - - \$1.75

THE S. S. WHITE DENTAL MANUFACTURING CO.

SOLE AGENT,

Philadelphia, New York, Boston, Chicago, Brooklyn.

prevents all acid reaction. When the hardening is hastened either by the hot-air syringe or by the use of hot water, varnishing the filling may be dispensed with. **Directions accompany each package.**



The powder for this extremely hard and durable Cement is now supplied in colors which, used separately or combined artistically, will enable the dentist to imitate the shade of the tooth to be filled. Some degree of practice will be requisite for the production of a close resemblance, and it is important to observe that a shade darker than the tooth is less noticeable than a lighter shade.

The colors are contained in quarter-ounce bottles, No. 1 White, No. 2 Yellow, No. 3 Blue, and No. 4 Brown. The ounce fluid bottle has a stem extension of the ground-glass stopper that serves as a convenient dropper.

Price, four-color package - - - - - \$2.25

" half-ounce (one color) package - - - - - 1.50

THE S. S. WHITE DENTAL MANUFACTURING CO.,

Philadelphia, New York, Boston, Chicago, Brooklyn.

Dr. Brophy has materially changed the shape of his Band Matrices to improve their adaptability, and has increased the number to provide for a closer and wider range of usefulness. They are also made of a stronger metal, and are therefore more durable and less liable to break, even under undue strain. The set now consists of ten Band Matrices, two Screws, and the Key Wrench. The range of sizes gives ample opportunity for the selection of a band proportioned to the size of the tooth to which it is to be applied, so that there is no need to use a large band on a small tooth and thus necessarily bend or "kink" the matrix at a sharp angle.

PRICES.

Per set complete, 10 Bands, 2 Screws, and 1 Key Wrench	-	\$2.25
Bands - - - - -	each	.15
Screws - - - - -	"	.25
Key Wrench - - - - -	-	.25

How's Rotating Root-Reducer.



A Root-Trimmer or Reducer recently devised by Dr. W. S. How can be used in combination with or in place of appliances before described. It is set in a cone-socket handle, the pin of the center shaft inserted in the opening in the end of the root, and the scraper point rotated around the periphery underneath the gum-margin (see Fig. 1). The inward spring of the flat scraper shank causes the point to bear hard upon the root while following its outline closely. The root-end is reduced without change of contour, while its taper is reversed (A, Fig. 1), so that the greatest diameter is found at the portion acted on by the extreme end of the scraper point.

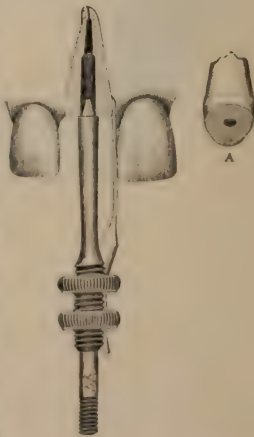
The scraper is adjustable endwise to increase or lessen the depth to which the root is reduced, and it may be set by turning the milled nuts forward for small roots, or backward for large ones. The scraper may be removed and the scraping sides sharpened by rubbing them on an Arkansas stone.

Price, How's Rotating Root-Reducer, without handle - each \$2.75

THE S. S. WHITE DENTAL MANUFACTURING CO.,

Philadelphia, New York, Boston, Chicago, Brooklyn.

FIG. 1.



THE ABBOTT AUTOMATIC PLUGGER.

Invented by Dr. FRANK ABBOTT.



The Abbott Automatic Mallet was designed specially to avoid the defects of other appliances of its class. It is simple in construction and combines with the usual direct blow a back action movement, actuated by the same mechanism, so that with it gold can be packed into cavities in almost any position in the mouth.

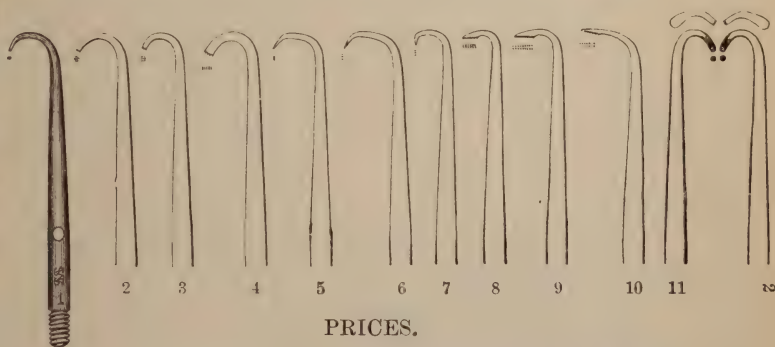
The working parts—pivotal latch, tripping mechanism, hammer, and spring—are entirely free from the case, being carried upon a spindle which passes centrally through it. This plan of construction avoids friction. Each end of the spindle is socketed for the reception of the plugger points, one end giving the direct push or thrust-blow, the other the pull or back-blow.

The Mallet combines simplicity of construction with easy, effective operation.

All the parts liable to wear are made of hardened steel, and the instrument throughout is made in the best manner.

For the direct blow the Cone-socket or Snow & Lewis points, either of which will fit the socket, may be used. For the back-action blow, Dr. Abbott has devised the set of points shown herewith. It is believed they will cover all requirements.

Price, Nickel-plated - - - - - \$9.00



PRICES.

Nos. 1 to 7 inclusive	-	-	-	-	-	-	each \$0.40
" 8 to 12 "	-	-	-	-	-	-	" .50
Set of 12 Points	-	-	-	-	-	-	5.25

The S. S. WHITE DENTAL MANUFACTURING CO.
Philadelphia, New York, Boston, Chicago, Brooklyn

—♦— FOUNDED 1869. —♦—

TRADE
\$
MARK



ON ALL
GUM
SECTIONS.

GIDEON SIBLEY,

DENTAL DEPOT,

THIRTEENTH AND FILBERT STREETS,
PHILADELPHIA, PA.

GIDEON SIBLEY'S SPECIALTIES.

TEETH.—Prices as follows after Sept. 15th, 1889:—

Gum Teeth, per set of 14,		\$1.25
	Less than 14, 10 cts. each.	
Plain Teeth, per set of 14,		\$1.12
	Less than 14, 9 cts. each.	

QUANTITY PRICES.

		GUM TEETH.		PLAIN TEETH.
For \$ 10.00	.	9 X 14	OR	10 X 14
" 25.00	.	24 X 14	OR	26 X 14
" 50.00	.	50 X 14	OR	54 X 14
" 75.00	.	80 X 14	OR	85 X 14
" 100.00	.	110 X 14	OR	115 X 14

FELT GOLD.

Superior to foils or other forms of Gold. Trial package, $\frac{1}{10}$ oz. \$1.00, $\frac{1}{2}$ oz. \$4.50.

NEEDLE FOIL CARRIER.

Patent applied for. Designed for Sibley's Felt Gold, but may be used with any form of Gold. Price, \$3.00.

GOLD AND PLATINUM ALLOY.

Never fails in making a perfect filling when used according to directions. $\frac{1}{2}$ oz \$1.00, $\frac{3}{4}$ oz. \$2.00, 1 oz. \$3.00.

ECLIPSE RUBBER.

Extra tough. Vulcanizes dark red. Per lb., \$2.75.

ARTICULATORS.

Equal to any \$2.00 Articulator in finish. Brass, 90c. each, nickel-plated, \$1.50

FORCEPS.

Best quality steel, all nickel-plated, guaranteed one year, \$2.25, Tremont, \$1.50.
Send for Catalogue.

PEERLESS RUBBER DAM.

Made only from the best Para Rubber. Rolls, 5 yards long, 6 inches wide,
price per roll, Thin \$1.00, Medium, \$1.50, Thick, \$2.00.

INSTRUMENTS.

Manufactured by skilled labor. Complete assortment Burs, Drills and Excavators.

DENTAL CUSPADORS.

No. 1, heavy spun brass, nickel-plated, with gold catcher, \$4.00; No. 2, light
spun brass, with gold catcher, nickel-plated, \$1.50.

DENTAL SYRINGES.

Metal, Chip blowers, Moffatt's, Hot Air, etc.

ANCHOR FLASKS, IMPROVED.

Brass, \$1.50, malleable iron, \$1.00. Postage, 25 cents extra.

DENTALIA.

A saponaceous and astringent Mouth-Wash. 25c. each, \$3.00 per dozen. Send
for sample free by mail.

STUDENTS' INSTRUMENT CASES.

Substantially made and finely upholstered, \$6.00 each.

MEDICINE CASES.

For emergencies, \$3.00 each.

PURPOLENE VARNISH.

For preventing plaster adhering to casts when vulcanizing. 25 cents per
bottle, 10 cents extra by mail.

SHELLAC VARNISH.

25 cents per bottle. 10 cents extra by mail.

SANDARACH VARNISH.

25 cents per bottle. 10 cents extra by mail.

LIQUID SILEX.

20 cents per bottle. 10 cents extra by mail.

MERCURY.

Strictly pure, in *special pattern glass bottle and holder combined*. Price, per $\frac{1}{4}$ lb.
bottle, 50 cents.

JAPANESE BIBULOUS PAPER.

Per 100 sheets, 40 cents.

DENTAL SCISSORS AND SNIPS.

Manufactured of best steel, 90c. to \$1.50.

GILLING TWINE.

Best imported, per skein, 10 cents.

DISKS.

Sand Paper, per box, 12 cents. 10 boxes for \$1.00.

SPUNK.

Our own importation of selected Velvet Spunk, per oz., 20 cents.

ENGINE OIL.

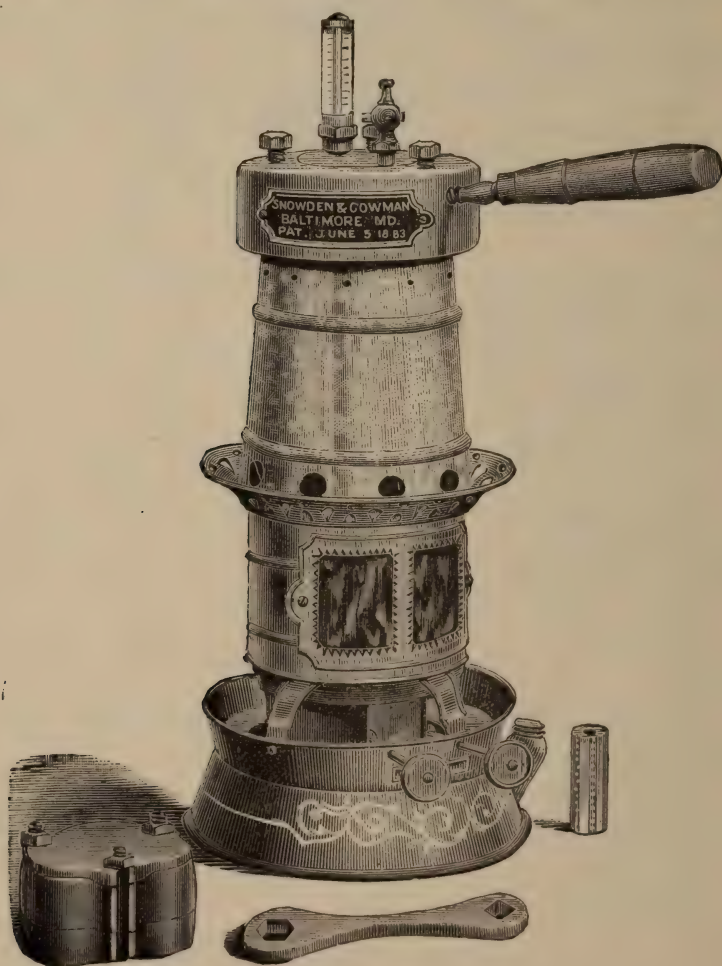
Oil that will lubricate and not gum. Nicely perfumed, per bottle, 25 cents.

NERVE BROACHES.

Per package of 1 dozen, 75 cents.

A full stock of GOLD FOILS, CYLINDERS, ALLOYS, AMALGAMS, CEMENTS
and DENTAL GOODS of all descriptions, always on hand.

SNOWDEN & COWMAN'S New Patent Vulcanizer.



PRICE:

Complete for Kerosene or Gas, with two Large
Malleable Iron Flasks, - - - - - \$18.0

MANUFACTURED AND FOR SALE BY

SNOWDEN & COWMAN,

86 WEST FAYETTE STREET,

BALTIMORE, MD.

Circulars furnished on application.



Gold Rolls

A PRACTICAL PAIR
OF GOLD ROLLS

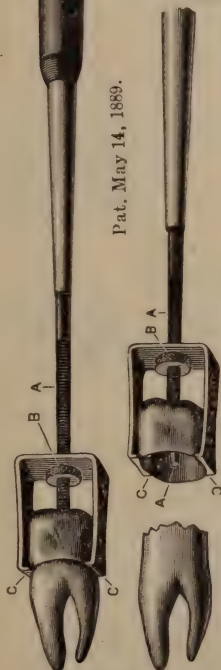
FOR

\$15.00.

These Rolls are made of the best of steel, well tempered, ground and polished, gear wheels nicely milled, all correctly adjusted. They are very compact, of the following dimensions, Height 10 in. Rolls, $2\frac{1}{4}$ in. wide by $1\frac{3}{4}$ in. diameter. Just the thing for Crown and Bridge work and general light rolling. Will pay for itself in six months, besides the convenience of being able to roll any desired gauge in a few minutes.

EACH PAIR WARRANTED.

Pat. May 14, 1889.



SOMETHING NEW!

Rosenthal's : Shell : Crown : Jack.

This instrument has received favorable comment and liberal patronage wherever it has been shown. It is the only device manufactured for successfully removing crown or bridge work without injury to the work or teeth. For adopting the cylinders to the teeth in making crown and bridge work it is invaluable, by reason of being able to remove the cylinders, no matter how hard they are driven on, a more accurate fit is made possible.

✦ ✦ You Cannot Afford to be Without It. ✦ ✦

DESCRIPTION.—Fastened to handle is a screw threaded shaft (A), which is received by an elongated screw threaded nut (B), which plays loosely on clamp (C). The illustration shows the method of working. To remove a completed crown or bridge work, drill a small hole in the middle of crown, place end of screw into the same, turn the screw so as to press on cement or tooth; no difficulty will be experienced in removing the most firmly set piece.

PRICE, \$1.50 POST PAID,

Including 1 Clamp. Extra Clamps, large, medium and small, can be had at 35 cents a piece.

Trade Supplied by **SAM'L. A. CROCKER & CO., Wholesale Agents,**

117, 119, 121 West Fifth St., CINCINNATI, O.

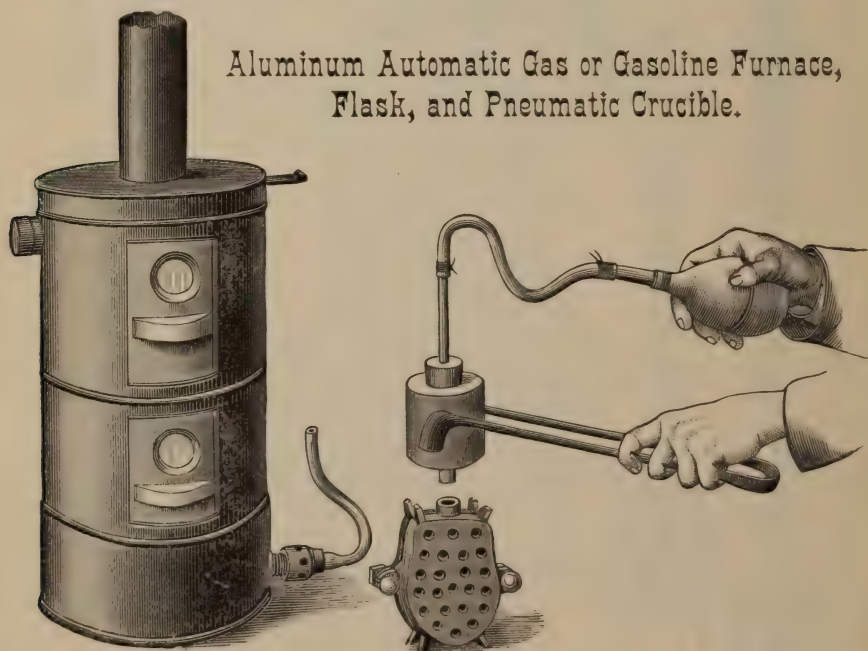
ALUMINUM CAST DENTURES.

The Carroll Aluminum Manufacturing Company now offers to the profession an entirely new and successful system of casting Crowns, Bridges, and Dental Plates, partial and complete, with their Prepared Chemically Pure Aluminum Bases, which combine great stiffness, conductivity, lightness, strength and durability, with the most perfect adaptation to the mouth and comfort to the wearer.

The Aluminum Cast Bases are non-oxidizable, and entirely free from any action of the secretions of the mouth, and at the same time perfectly compatible to the tissues, so that mouths congested and inflamed by the use of vegetable bases, make a speedy and permanent recovery by the use of these Aluminum Bases.

While the method of casting all forms of dentures with these metallic bases is reduced to the greatest simplicity and ease of construction by the dentist of average skill, yet are they susceptible of the highest artistic attainment known in prosthetic dentistry. They take and retain a beautiful polish, resembling the finest nickel-plate.

Aluminum Automatic Gas or Gasoline Furnace,
Flask, and Pneumatic Crucible.



Material enough is furnished with each outfit to make from seven to nine dentures, from which an advance in price over other bases now used will be commanded to more than pay twice the cost of the entire outfit.

These prepared Aluminum Bases are freed from iron and other impurities that pertain to the aluminum of commerce, which render it impracticable as a dental base in many cases.

These goods are placed before the profession on their merits, upon the most liberal terms, without any charge of license or royalty upon the patents by which they are covered, and by the use of which all other patents for Crowns and Bridges are evaded.

The appliances for doing this Aluminum cast work combine simplicity, neatness, economy, and durability, consisting in a complete outfit ready for attaching to a laboratory gas jet, with which the work is done perfectly.

Full and explicit instructions, with illustrated cuts, will accompany each outfit.

Orders with remittances, or to be shipped C. O. D., will receive prompt attention. Address,

The Carroll Aluminum Dental Manufacturing Co.,
Office, 391 5th Avenue. **NEW YORK CITY, N. Y.**

For Sale by Ransom & Randolph, Toledo, Ohio.

PRICES.

Automatic Gas or Gasoline Furnace	- - - - -	\$20.00
Aluminum Solid Flame Gas Burner	- - - - -	3.00
Aluminum Solid Flame Gasoline Burner	- - - - -	5.00
Compound Pneumatic Crucible	- - - - -	5.00
Crucible Stopper and Stem	- - - - -	1.00
Rubber Bulb, with connections and tubing	- - - - -	1.00
2 Iron Flasks, fitted to Pneumatic Crucible at \$1.25	- - - - -	2.50
2½ oz. prepared Aluminum Base No. 1, at \$3.00	- - - - -	8.00
4 oz. prepared Aluminum Base No. 2, at \$1.00	- - - - -	4.00
Emery and Rouge Polishing Cake	- - - - -	1.00
Three doz. Sheets fine Base Plate Wax	- - - - -	1.25
10 Quart Can Investing Material	- - - - -	1.50
2 Open Battersea Crucibles	- - - - -	.50
1 pair 14-inch Steel Crucible Tongs	- - - - -	.75
Boxing	- - - - -	.50
Outfit Complete, for Gas Burner		\$50.00
Outfit Complete, for Gasoline Burner		52.00

These Aluminum Cast Bases have been exclusively employed in the practice of the inventor, Dr. C. C. Carroll, of New York, during the past five years, with the most perfect success and satisfaction.

Testimonials of the Profession.

DR. W. H. EAMES, of the Missouri Dental College, St. Louis, says: "Dr. J. G. Harper, Professor of Mechanical Dentistry in this College, has made several Aluminum Cases successfully by your process, with the outfit which the College got of you. He cast a full upper plate for me which is very nice indeed."

DR. CHARLES O. BEAM, of St. Catharines, Canada, says: "I have been very successful in the manipulation of your Aluminum outfit, and have cast several plates, which are now being worn by my patients with great satisfaction in every case, and I must say that I think your method one of the greatest strides toward perfection in mechanical dentistry yet made."

"The entire process is so simple, as well as practical, and applicable in every case in prosthetic dentistry."

DR. A. O. HUNT, Professor of Mechanical Dentistry in the Iowa State University, in his remarks before the American Dental Association at Niagara Falls, said: "The Association to-day had seen true scientific work done by Dr. Carroll in his clinic demonstrating his practical methods of casting Aluminum dentures, that delighted him, and he believed that it was the greatest advance in mechanical dentistry that this generation of dentists had seen."—*Independent Practitioner*, January, 1888.

PLATTSBURGH, Mo., Dec. 5th, 1887.

ALUMINUM DENTAL APP. CO.:

Dear Sirs:—I desire to say that I am having very good success casting Aluminum plates with the outfit I bought of you. I am well pleased with your method and would not be without it.

J. F. DEBERRY.

TOLEDO, O., April 5, 1888.

DR. C. C. CARROLL, Meadville, Pa.:

Dear Sir:—For the encouragement of other members of the dental profession who may want to use your Cast Aluminum method and outfit, I desire to say, since I introduced your method into my practice in August last I have had most satisfactory success in setting Aluminum plates, and in all cases thus far perfect adaptation to the delight of myself and patients. I have used it in the most difficult cases when I was unable to get a satisfactory result until I made use of your Cast Aluminum plates. The results thus far have been most complete and all I could wish. I hope you may be successful in introducing it to many who like to see good results from their labor.

I am respectfully yours, C. H. HARROUN, M.D., D.D.S.

The Valleau Manufacturing Company

SUCCESSORS TO

WM. VALLEAU, Jr.,

506 Broome Street,

NEW YORK.

MANUFACTURERS OF

Soft Gold Foil, Cohesive Gold Foil,

SOFT AND COHESIVE

GOLD CYLINDERS.

EUREKA GOLD FILLING.

Extra Dry Alloy—Improved Amalgam, Etc.


ESTABLISHED 1849.

SPECIAL NOTICE.

Reduced Prices of *Hard Rubber and Corundum Disks and Points and Corundum Disks, Points and Stump Wheels.*

PRICES.

Hard Rubber and Corundum <i>Disks</i> , not mounted,	-	-	per doz.	\$1.20
" " " <i>Points</i> , " "	-	-	"	.70
Corundum <i>Disks</i> , not mounted,	-	-	-	.75
" <i>Disks</i> , mounted,	-	-	-	1.50
Corundum <i>Points</i> , not mounted,	-	-	-	.40
" <i>Points</i> , mounted,	-	-	-	1.00
Corundum <i>Stump Wheels</i> , not mounted,	-	-	-	.75
" <i>Stump Wheels</i> , mounted,	-	-	-	1.50

 We use three grits of Corundum, *Fine, Medium and Coarse.*

When not stated in orders the grit required, we will always send assorted, but mostly of the medium grit.

AMERICAN DENTAL MANUFACTURING COMPANY,
1298 & 1300 Broadway,
NEW YORK.

AKRON DENTAL RUBBER.

The materials of which this Rubber is composed are prepared by a new process, which insures

ABSOLUTE PURITY,

resulting in a product of wonderful Density, Fineness and Strength. It is especially designed to meet the requirements of those who seek to produce the most perfect and artistic work. It is exceedingly tough and light, and takes a beautiful polish. Plates may be made very thin without splitting or crumbling away about the edges. It can be used with the best results for making partial lower dentures, an advantage which no other rubber possesses. It has the unqualified approbation and endorsement of the profession everywhere and never fails to give satisfaction.

It Will Cost You Nothing to Try It.

SEND FOR SAMPLES AND PRICES.

AKRON RUBBER WORKS,
AKRON, OHIO.

For Sale by Ransom & Randolph and at all Dental Depots.

LUKENS & WHITTINGTON,

OUR
Instruments

Are Warranted

First Class

All kinds of

Repairing

Carefully
attended to.

SEND for PRICE LIST



DENTAL

Supplies

of All Kinds.

ORDERS

Will Receive

Prompt

Attention.

626 Race Street,

PHILADELPHIA, PA.

“THE OLD RELIABLE.”

LAWRENCE'S



AMALGAM.

This AMALGAM has received the endorsement of the Dental Profession at large for over forty-four years which would seem to render any remarks as to its excellence superfluous.

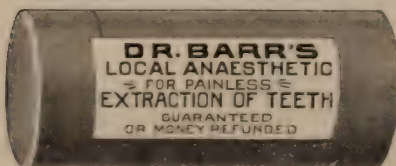
Beware of FRAUDULENT IMITATIONS, whether from so called analysis or otherwise, and remember that Lawrence's Amalgam is always put up in a white lithographed envelope, covering a brown one containing the Amalgam, with Trade Mark on the lap of each, and both copyrighted.

THE S. S. WHITE DENTAL MANUFACTURING CO., Chestnut St., Cor. Twelfth St., Philadelphia, Pa., is sole Agent, and all communications should be addressed accordingly.

Prices, 1 oz. \$3.00; 2 oz. \$5.50; 4 oz. \$10.00. For sale at all respectable Dental Depots.

Manufactured only by

AMBROSE LAWRENCE, M. D. 476 Columbus Avenue, Boston, Mass.



Painless Dentistry.

A two ounce bottle of **Barr's Local Anaesthetic** sent prepaid to any address in the U. S. for \$1.00, and guaranteed to make teeth extracting painless, or money refunded, by Dr. E. T. Barr, Manufacturer and Proprietor, Bowling Green, Kentucky. A circular full of testimonials from the most prominent dentists of the U. S. sent on application.

Also for sale by Ransom & Randolph.

SAMSON RUBBER

STRONGEST AND MOST UNIFORM RUBBER MANUFACTURED.

SAMSON RUBBER.

TRADEMARK.
No. 3788.



Registered
June 20th, 1876.

PRICE LIST OF DENTAL RUBBERS AND GUTTA-PERCHA.

No. 1 Rubber	-	-	-	Per Lb.	-	-	-	-	-	-	\$2.25
No. 2 Rubber	-	-	-	"	-	-	-	-	-	-	2.25
Black Rubber	-	-	-	"	-	-	-	-	-	-	2.25
Gutta-Percha for Base Plate,	-	-	-	"	-	-	-	-	-	-	2.25
Less than 10 lb., per lb.	-	-	-	\$2.25	In 25 lb. lots, per lb.	-	-	-	-	\$1.90	
In 10 lb. lots,	-	-	-	2.00	In 50 lb. lots,	-	-	-	-	1.75	
Samson Rubber	-	-	-	Per Lb.	-	-	-	-	-	-	2.75
Maroon Rubber	-	-	-	"	-	-	-	-	-	-	2.75
Flexible or Palate Rubber	-	-	-	"	-	-	-	-	-	-	2.75
Vulcanite Gutta-Percha	-	-	-	"	-	-	-	-	-	-	2.75
Less than 10 lb., per lb.	-	-	-	\$2.75	In 25 lb. lots, per lb.	-	-	-	-	\$2.00	
In 10 lb. lots	-	-	-	2.25	In 50 lb. lots,	-	-	-	-	1.80	
No. 1 Weighted Rubber, mixed with Pure Metal,	-	-	-	Per Lb.	-	-	-	-	-	-	4.00
No. 2 " " " " " "	-	-	-	"	-	-	-	-	-	-	4.00
Black " " " " " "	-	-	-	"	-	-	-	-	-	-	4.00
Weighted Gutta-Percha	-	-	-	Per Lb.	-	-	-	-	-	-	4.00

Adamantine Filling or Stopping.

These Rubbers being made from carefully selected Para Gum, and Manufactured by Improved Processes, I can guarantee them to give entire satisfaction to the user and retain a high polish.

For any Further Information, Address,

EUGENE DOHERTY,

110 and 112 Kent Ave., Cor. North Eighth St.,

BROOKLYN, E. D., N. Y.

CAULK'S FILLING MATERIALS.

ESTABLISHED 1877.

ESTABLISHED 1877.

CAULK'S DIAMOND CEMENT

GRAY YELLOW. LIQUID. MEDIUM. LIGHT.

FOUR COLORS and LIQUID.—Gray, Yellow, Medium and Light, \$2.00 per Pkg.
 TWO COLORS and LIQUID.—Gray and Yellow, 1.50 " "
 ONE COLOR and LIQUID.—Gray, Yellow, Medium, Light or Gum, 1.00 " "

THIS COMPOUND STANDS WITHOUT A RIVAL.

Used since 1877 by Leading Dentists Throughout the World.

DIAMOND CEMENT

It Hardens in Water or Saliva.

Should not be classed with the so-called oxy-phosphates, as is often the case—the materials of which it is composed and its process of manufacture being entirely different—hence its SUPERIORITY.

Two or more colors blended together (in mixing) will produce any shade desired.

CAULK'S PAR-EXCELLENCE ALLOY.

This GOLD AND PLATINA ALLOY is manufactured on a new principle, has won its way into popular favor, and now ranks among the best. By our new method of manufacture, there is no GUESS-WORK, the molecular change is controlled, making each and every ingot always and absolutely alike in its properties.

Price, \$3.00 per Ounce. 2 Ounces, \$5.00. 5 Ounces, \$11.00.

CAULK'S WHITE ALLOY

Has been greatly improved, costing more to produce it.

This ALLOY contains NO Zinc or Cadmium; is of a peculiar grayish-white color, has good edge-strength, and will stand mastication anywhere in the mouth.

Price, \$4.00 per Ounce. 2 Ounces, \$7.00. 5 Ounces, \$15.00.

Caulk's Diamond Point Stopping and Gutta-Percha Points for Filling Roots.

Price, in $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$ and 1 ounce packages, per ounce, (reduced to) \$2.00.

All of Caulk's Filling Materials are sold by Troy Weight, and sent by mail.

Over 15,000 Dentists are using these Materials throughout the world. What better evidence do you wish of their Superiority and Excellence?

L. D. CAULK, Manufacturer, Camden, Delaware.

R. S. WILLIAMS,

MANUFACTURER OF

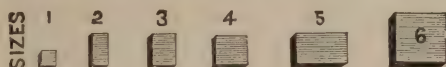
STANDARD COHESIVE GOLD FOIL,
STANDARD MEDIUM GOLD FOIL,
STANDARD SOFT GOLD FOIL,
STANDARD CORRUGATED GOLD FOIL,
STANDARD CRYSTAL SURFACE GOLD (Rolled),
STANDARD UNTRIMMED GOLD FOIL (Cohesive),
STANDARD UNTRIMMED GOLD FOIL (Soft).

STANDARD GOLD CYLINDERS, Styles A, B & C.



NON TIPPING GOLD CYLINDERS (Cohesive),
NON TIPPING GOLD CYLINDERS (Soft),
BURNISH GOLD CYLINDERS (Cohesive),
BURNISH GOLD CYLINDERS (Soft).

RECTANGULAR GOLD PELLETS.



NON TIPPING GOLD BLOCKS,
FOLDED GOLD FOIL,
GOLD AND PLATINA, FOR FILLING (Folds and Rolled).

ELECTRIC GOLD, (Cohesive)—ALWAYS RELIABLE.
CRYSTALLOID GOLD—The Most Practical Plastic Gold, obviates all difficulty in commencing fillings.

STANDARD TIN FOIL AND CYLINDERS,
GOLD LIGATURE WIRE,
AMALGAM ALLOY, No. 1.

GOLD PLATE, SOLDERS, WIRE, ETC. } For Crown
PLATINA PLATE AND WIRE (Hard and Soft,) } and Bridge
Work.

115 WEST 42d STREET,

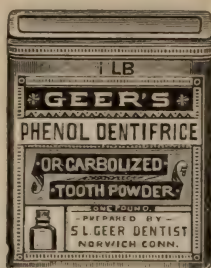
NEW YORK CITY.

For sale by RANSOM & RANDOLPH,

TOLEDO, O., and INDIANAPOLIS, IND

GEER'S PHENOL DENTIFRICE.

or CARBOLIZED TOOTH POWDER.



To maintain the health of the **Mouth** and preserve the freshness and beauty of the **Teeth**, the frequent use of a dentifrice becomes indispensable. It is important to obtain an article free from obnoxious ingredients, the presence of which would surely cause numerous troubles, the origin of which is unsuspected.

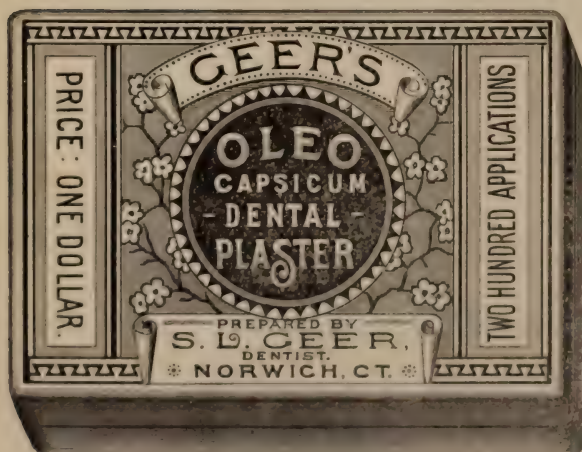
The proprietor of Phenol Dentifrice recommends it to the notice of those not already acquainted with its long established merits. This preparation, which has been in the highest repute since its introduction in 1870, and sold to the dental profession throughout the **United States** by the leading Dental Depots, is a scientific combination of the finest materials, so united, chemically, as to insure the greatest efficiency and the best possible results upon the **MOUTH, TEETH AND GUMS.**

The excellence of this Dentifrice has obtained for it the strongest recommendation of many of the professors in our **DENTAL COLLEGES**, as well as from those most noted in private dental practice.

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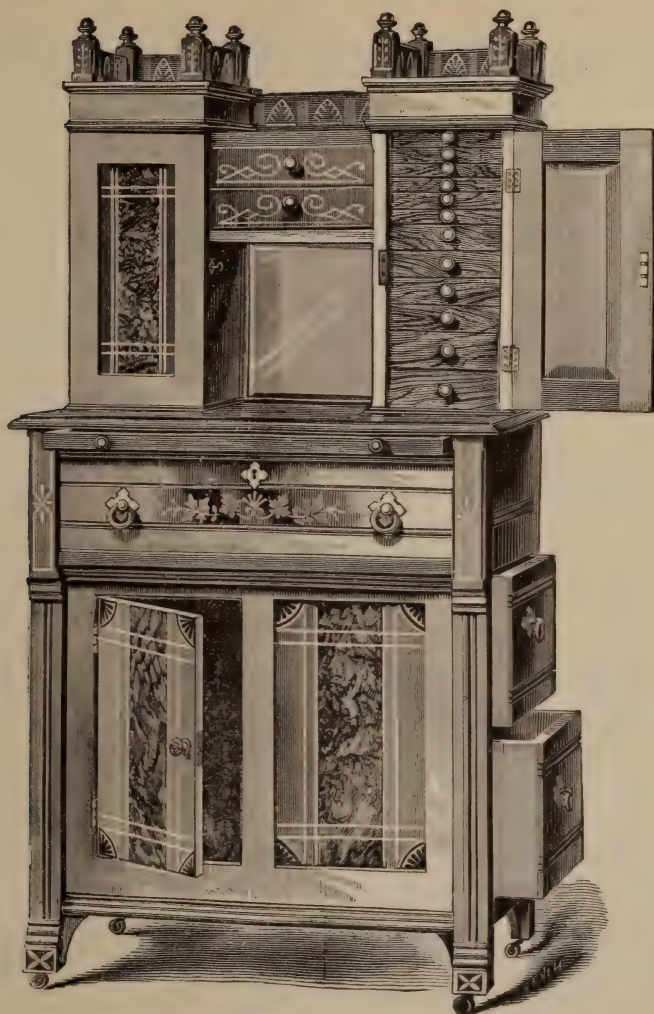
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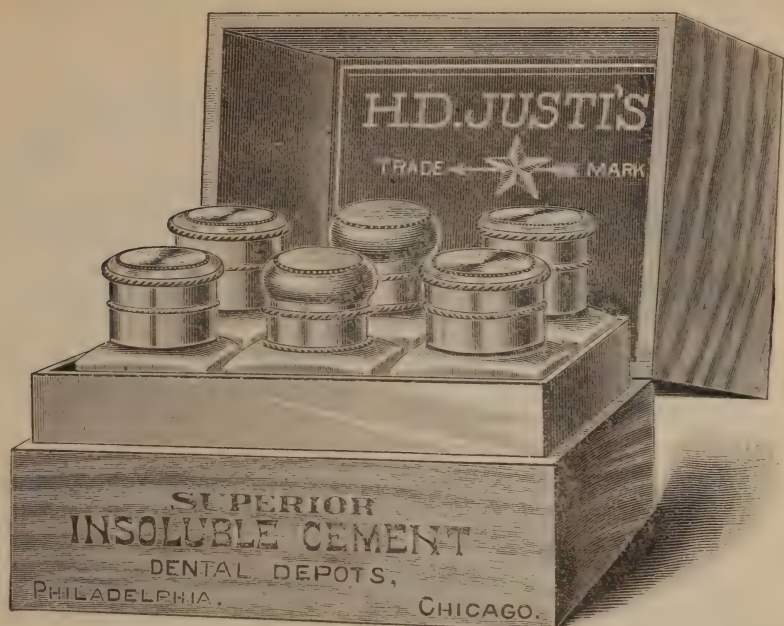
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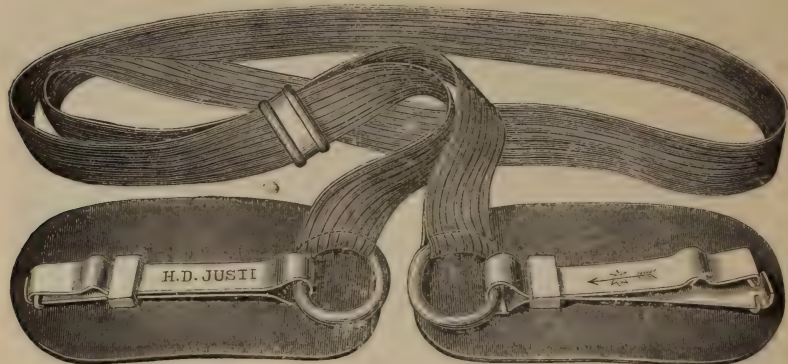
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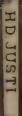
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FEBRUARY, 1890.

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L. P. BETHEL, D. D. S.,
TOLEDO, OHIO.

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L. P. BETHEL, D. D. S.,
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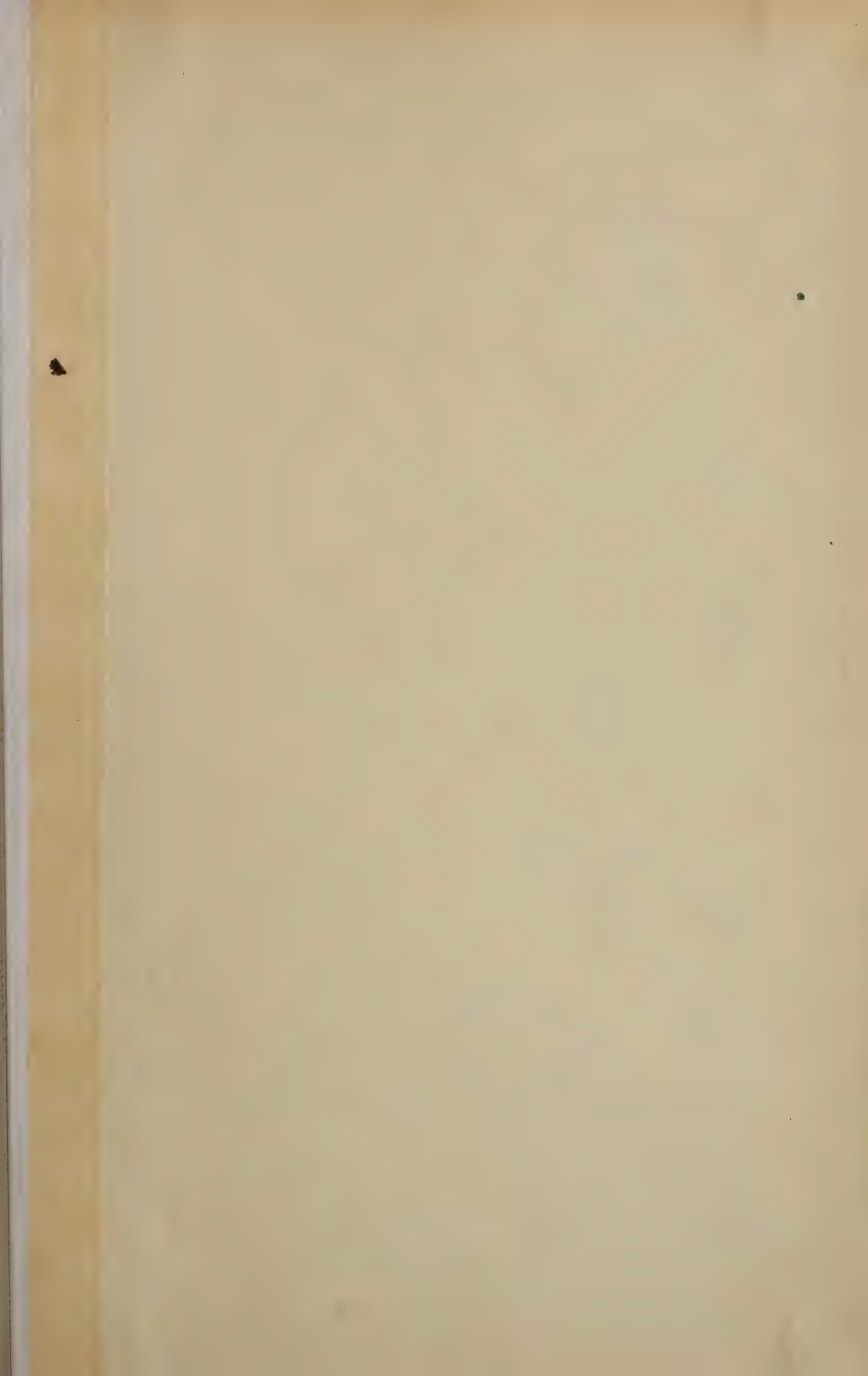
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